VILMA

(Virtually Interactive Large-scale Model for Arkansas)

USER'S GUIDE

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CHAPTER I

BASIC CONCEPTS

1.1 User's Guide Organization

This user's guide supports the use of VILMA (Virtually Interactive Large-scale Model for Arkansas). This document presents the basic concepts in Chapter I. Chapter II discusses the execution steps that the user follows during a VILMA session. Chapter III provides a detailed illustration of example data files. Chapter IV presents two example VILMA sessions. Finally, Chapter V elaborates on additional concepts. The Appendices consist of relevant program listings, instructions, and example files. In this user's guide, the word "interactive" means the user enters his responses to the prompts that appear on a computer terminal while he is logged on to his CMS (Conversational Monitor System) account.

1.2 Program Structure

VILMA is a computational tool that facilitates the generation of strategies for conjunctive management of surface water and sustained groundwater pumping. It also provides the option to implement a monthly allocation model. VILMA is a program package that is designed to:

a) access the data bank files through interactive direction from the user,

b) create a GAMS (General Algebraic Modeling System) program of the management model formulation for a study area, and

c) automatically submit the GAMS program for execution as a batch job.

Developed at the World Bank, (Kendrick and Meeraus, 1985), GAMS is a propriety product of GAMS Development Corp. One of the optimization code options of GAMS is MINOS (Modular In-core Nonlinear Optimization System). MINOS is the appropriate choice for large and sparse problems (Murtagh and Saunders, 1987). For this reason, MINOS is used to solve the model for EARCS (Eastern Arkansas Region Comprehensive Study) area. However, the user does not need a working knowledge of GAMS nor MINOS to be able to use VILMA. The EARCS study area is a system of 1595 finite-difference cells. The data for the EARCS area comes from various agencies in different input formats. Thus, VILMA is specifically structured to accept input from data files of varying formats.

Figure 1.1 shows the hierarchy of the programs in the VILMA program package. The VILMA exec program (Appendix B) serves as a control program. It proceeds by calling on the EARCS exec program (Appendix C)

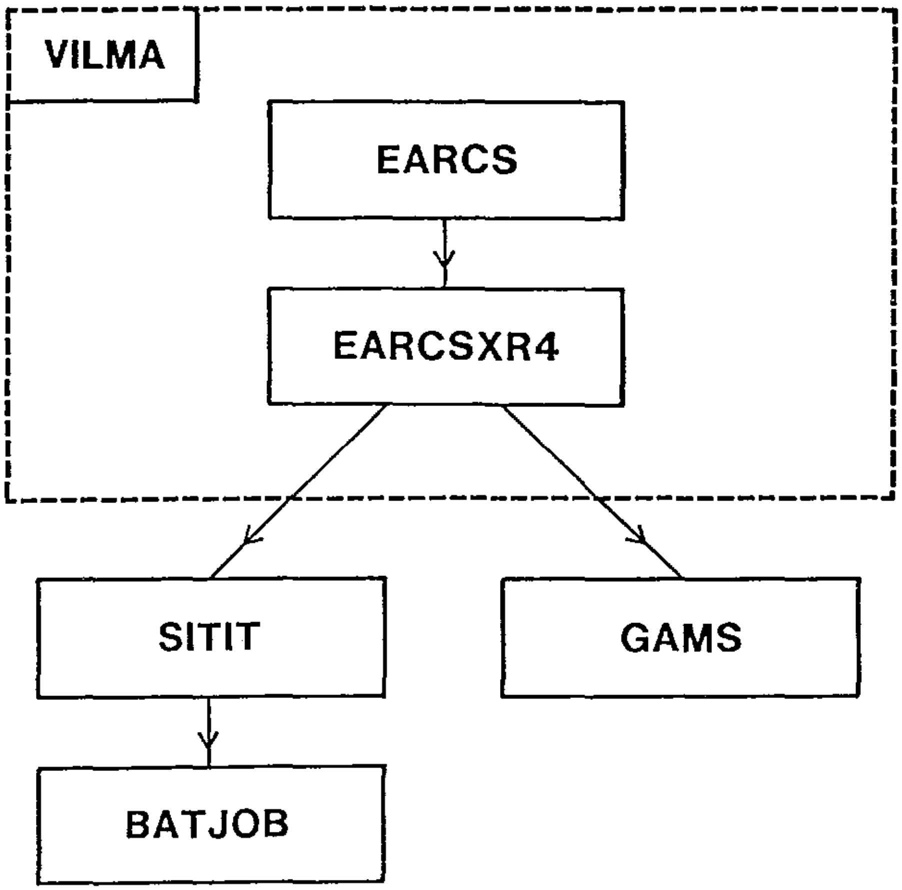

Figure 1.1 Hierarchical Diagram of VILMA EXEC

for the interactive supply of data file specification information. It creates the coded model and then calls on the EARCSXR4 exec program (Table 1.1) for submission as a batch job. The EARCSXR4 program calls on the SITIT and BATJOB exec programs. The solution of the model is automatically routed to the reader of the user's CMS account.

It is assumed that the user is familiar with the IBM CMS environment. In particular, the user must know how to:

a) log on to his computer account,

b) establish passwords (both log on and A(191) disk passwords)

c) create and edit data files,

d) obtain information on the record lengths of data files, and

e) receive files from the reader list.

Before invoking VILMA, the user must:

a) be ready to provide information on names and record lengths of the required data files or be ready with the file DATADEFN EXEC A,

b) have created the file EARMODEL INPUT A, and

c) have chosen a name for the model.

An illustrative example of file DATADEFN EXEC is given in Chapter 3. The instructions for creating the file EARMODEL INPUT A are in Appendix E.

Figure 1.2 shows the interaction between the user and the system. The user is expected to interactively provide information on names and

Table 1.1

EARCSXR4 EXEC Program Listing

```
&TRACE OFF
FILEDEF TERMI TERM
FILEDEF TERMO TERM
FILEDEF EXEC DISK TOBATCH EXEC A (RECFM F LRECL 80 BLKSIZE 80
IDENTIFY (LIFO
SITIT
EXEC BATJOB TOBATCH (CLASS R SECONDS  144000
ERASE TOBATCH EXEC A
&EXIT
```

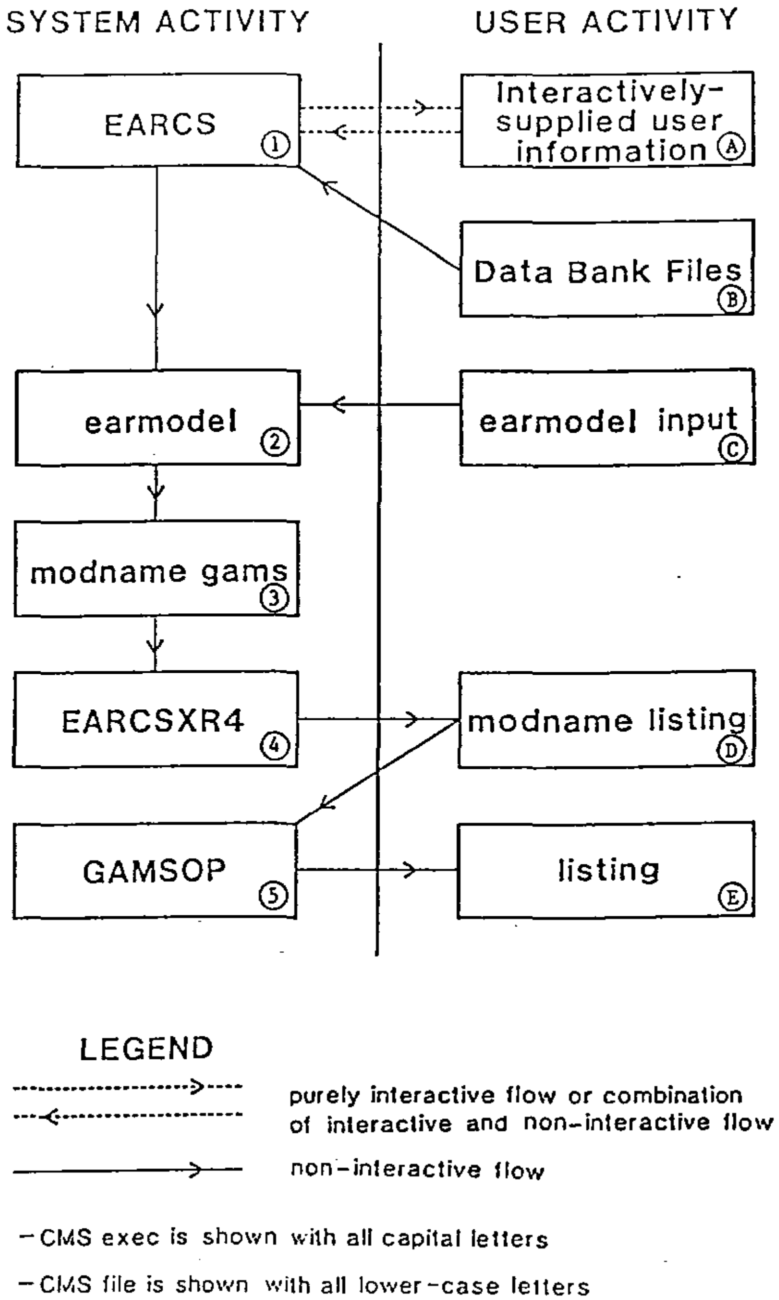

Figure 1.2 VILMA'S Algorithmic Diagram

record lengths of the required data files. There is an option to supply these information non-interactively. In this case, the user needs to create a data file definition exec program and call it DATADEFN EXEC A. The user is required to give a name to the model. The data files and the file EARMODEL INPUT A are then used by EARMODEL MODULE (the binary version of the EARMODEL FORTRAN program in Appendix A) to generate the GAMS code of the model. This file is stored in the A(191) disk of the user's CMS account (the filename is the user-supplied model name and the filetype is GAMS). This code is submitted by the EARCSXR4 program as a batch job. Upon completion of this job, the user will find the results in the reader of his account (the filename is the user-supplied model name and the filetype is LISTING). There is an option to implement post-processing. This is made known to VILMA through the file EARMODEL INPUT A. In this case, EARMODEL MODULE creates the GAMS file and an accompanying commands file (the filename is the user-supplied model name and the filetype is COMMANDS). This commands file directs the GAMSOP (General Algebraic Modeling System Output Processor), a post-processor developed by Bill Ashmore of the University of Arkansas Computing Center (1988). GAMSOP provides a listing of the results in map format.

1.3 System Considerations

VILMA was used in running models for the EARCS area. In this particular case, the data files required considerable computer storage space. Therefore, the data files were stored in a disk pack. At the University of Arkansas, the RICH01 disk pack is used for this purpose. VILMA links to RICH01 and automatically accesses it as an F disk. In a different IBM computing facility, the link statement in the VILMA exec program must be changed accordingly. For VILMA to execute properly, two groups of files are needed. The first group of files must be in RICH01 while the second group must be in the A(191) disk of the user's CMS account. These files are:

Group I. Files in RICH01

a) EARMODEL MODULE F
b) GAMSMN5X MODULE F
c) GAMSMN5X EXEC F
d) GAMSCMEX MODULE F
e) SITIT MODULE F
f) BATJOB EXEC F
g) GAMSOP EXEC F (optional)
h) GAMSOP MODULE F (optional)

Group II. Files in the A(191) disk of the user's CMS account

a) VILMA EXEC A
b) EARCS EXEC A
c) EARCSXR4 EXEC A
d) EARMODEL INPUT A
e) DATADEFN EXEC A (optional)
f) RREACH DATA A (optional)

The files GAMSMN5X MODULE F, GAMSMN5X EXEC F, GAMSCMEX MODULE F, are GAMS/MINOS material. Information on installation of GAMS can be obtained from:

Alex Meeraus
GAMS Development Corporation
2828 Albemarle St.
Washington, D. C. 20008
(202) 232-5662

Licensing information for the use of MINOS in any institution is available from (See Note at end of chapter):

The Office of Technology Licensing
Stanford University
350 Cambridge Avenue, Suite 350
Palo Alto, California 94306
(415) 723-0651

There must be enough space in the A(191) disk to contain the GAMS file (as well as the COMMANDS file in case the post-processing option is selected). As an example, a GAMS file for the EARCS area typically has 4700 records. The COMMANDS file has a maximum of 144 records. It is recommended that a 4 megabyte storage be defined when the user logs on to his account. During the batch execution of the model, an EARCS model requires at least 12 megabytes of virtual memory space. A typical EARCS model completes after about 8,300 seconds.

The model runs for the EARCS area (Cantiller, et al., 1988) were done at the University of Arkansas Computing Center. The following step-by-step guide proved useful (CMS commands are underscored):

1. Get a CMS account and know or establish the password (newpass).

2. Establish a password for the A-disk (newpass).

3. Prepare or get ready with the necessary data files.

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1. Get a CMS account and know or establish the password (newpass).

2. Establish a password for the A-disk (newpass).

3. Prepare or get ready with the necessary data files.

4. Call the operator to mount RICH01 (x-2904).

5. Log on to the CMS account.

6. Define storage to 4 megabytes (def stor 4m).

7. Go to CMS by using the command ipl cms.

8. Start the VILMA session (VILMA).

9. Answer each question that appears on the computer terminal.

10. Call the operator to release BATCH-6 (x-2904).

11. Verify that the run has started (bstatus).

12. Receive results from the reader of the CMS account (if *name* is the user-supplied model name, the CMS command is receive *name* LISTING A).

Note: Using VILMA requires proprietary software. For smaller study areas the SSTAR5 model (Peralta et al, 1985) is useful. It computes sustainable groundwater pumping strategies that maintain a target potentiometric surface or that maximize extraction. SSTAR5 does not consider surface water availability, but does include stream-aquifer interflow. That report includes a user's manual.

CHAPTER II

EXECUTION STEPS

The execution of the VILMA program is discussed in this chapter. The flowchart in Figure 2.1 supplements this discussion. The session is initiated by a simple command, VILMA (1). At this point, six questions appear on the screen (2). These questions serve as reminders on tasks that are needed to be done prior to any VILMA session. If the user is not ready, the session is terminated (3 and 4). Otherwise, the session continues. The next prompt concerns the implementation of the monthly allocation model (5). Depending on the response from the user, the screen shows a list of all the data parameters required (6 or 7). Then the user is given the chance to choose the mode of data specification (8). For non-interactive mode, VILMA verifies that the DATADEFN EXEC A file has been created (9). If more time is needed to create this file, the session is terminated (3 and 4). Otherwise, VILMA prompts to supply the a) name of the model, b) log on password, and c) A(191) disk password appear on the terminal (11). In this case, the session is successfully completed (12). If the user wishes to provide the data file specifications interactively, VILMA verifies that the needed information is ready (13). The user may wish to STOP at this point (3 and 4). On the other hand, a GO response triggers another prompt on the terminal. The question about the implementation of the monthly allocation appears again (14). An affirmative answer initiates a series of questions for filename, filemode, filetype, and record length of each of the twenty-two required data files (15). In addition, VILMA verifies that the information is correct. This gives the user a chance to change the entries. If monthly allocation is not intended, only twenty sets of data specification questions appear (16).

A summary of the logic paths is presented in Table 2.1. There are only nine possible logic paths. Four of these paths (IV, V, VI, and VII) result in successfully completed sessions. The other paths lead to termination.

Table 2.1

VILMA Session User's Logic Paths

SESSION TYPE	SESSION PATH	COMMENT
I	1-2-3-4	terminated
II	1-2-5-7-8-9-3-4	terminated
III	1-2-5-6-8-9-3-4	terminated
IV	1-2-5-7-8-9-10-11-12	completed
V	1-2-5-6-8-9-10-11-12	completed
VI	1-2-5-7-8-13-14-16-10-11-12	completed
VII	1-2-5-6-8-13-14-15-10-11-12	completed
VIII	1-2-5-7-8-13-3-4	terminated
IX	1-2-5-6-8-13-3-4	terminated

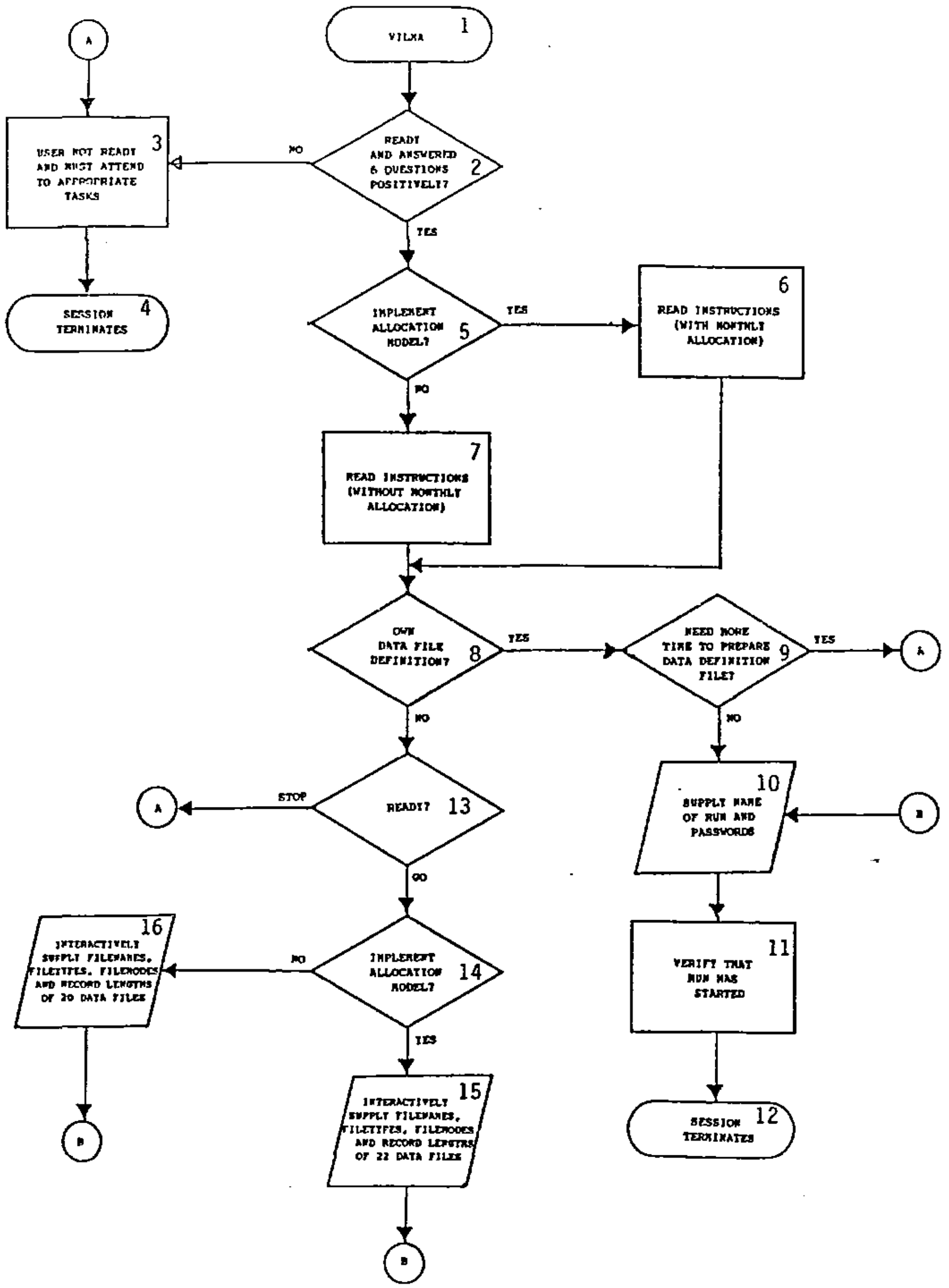

Figure 2.1 User Activity Flowchart in a VILMA Session

CHAPTER III

DATA REQUIREMENTS

3.1 Data File Format

Three different data file formats are acceptable to VILMA. Data files that are in a) i-j format, b) rowwise format, or c) GAMS tabular format may be used by VILMA. However, each data file must have at least one header card.

The header card or cards in the data file is not used in the generation of the GAMS model. However, the presence of the header card or cards helps to better organize the data bank. The header card is useful in recording important information about the data file itself. It can be used to record information on the: a) source of the data, b) data units, c) format code, d) data type, and e) data updates or changes.

The i-j format requires each record in the data file to have a row index, a column index, and parameter value. Each record can only have data for one cell, that is, only one pair of row index and column index. However, it is possible to have one or more parameter values in a record. This means that a data file may provide more than one parameter information. As an example, a data file may have entries of row index, column index, river stage, and river conductance. In this case, the same data file stores two parameter data information. Of course, the format code for reading the data is different for each parameter. The cell-by-cell record is not required to come in any ordered fashion. For example, the first record in the data file may be for cell (3,4) and the next for cell (66,23). Athough no specific ordering of records is necessary, the last record must always have a row index entry of "-1". This acts as a trailer card to indicate that no other record follows. The data files in Appendices L and M are examples of this type of format.

The rowwise format does not need a trailer card. It assumes that the data is entered in a rowwise fashion. This means that the data for a finite-difference cell system is entered row by row. Data for the first row is entered from the first column up to the last column, using more than one record if necessary. Then the data for the second row follows, and so on. The first column is always the lowest column index in the whole area. On the other hand, the last column is always the highest column index in the system. In creating files of this format, extreme care is necessary. There should be enough entries for all the cells in the study area. Furthermore, this format does not allow more than one parameter in a single data file. The data file in Appendix J is an example of a rowwise formatted file.

A data file that is in GAMS tabular format is already in a GAMS code form. A record that has the string " TAB" or "LAST" in the first four columns are not used in the GAMS model code. All other data records become part of the GAMS model as they appear in the data file. The card with the character string "LAST" is the trailer card. It indicates the end of the data file. Data files in Appendix K are in GAMS tabular format. Data files in GAMS tabular format must have a fixed record length of 121.

3.2 Data Files

VILMA requires data on at least twenty parameters. A list of the parameter data file requirements is given in Table 3.1. Each data file is potentially a data file for one or more than one parameter. Therefore, it is possible to have less than twenty data files. If the monthly allocation model is implemented, VILMA requires a data file that stores monthly deep aquifer information and another file that provides monthly agricultural demand data.

In the EARCS project, the U. S. Geological Survey provided the data on aquifer top, aquifer bottom, boundary array, historic initial head

Table 3.1

List of Required Data Files

1. AQUIFER TOP
2. AQUIFER BOTTOM
3. BOUNDARY ARRAY
4. LOWER LIMIT ON EFFLUENT
5. UPPER LIMIT ON EFFLUENT VALUES
6. INFLUENT VALUES
7. INITIAL HEAD ELEVATION
8. LOWER LIMIT ON GROUNDWATER PUMPING
9. GROUNDWATER DEMAND OF NON-ARKANSAS CELLS
10. HYDRAULIC CONDUCTIVITY VALUES
11. RIVER INDICATOR ARRAY
12. OVERLAND INFLOW
13. RIVER CONDUCTANCE VALUES
14. LOWER LIMIT ON RECHARGE FOR CONSTANT HEAD CELLS
15. RIVER STAGE VALUES
16. GROUND ELEVATION
17. AGRICULTURAL GROUNDWATER DEMAND
18. DEEP AQUIFER DEMAND
19. SURFACE WATER DEMAND
20. TOTAL WATER DEMAND

Table 3.2

Example of Tabulated Information Known to the User Prior to a VILMA Session

DESCRIPTION	FILENAME	FILETYPE	FILEMODE	RECORD LENGTH
AQUIFER TOP	ATOP	DATAROW	F	80
AQUIFER BOTTOM	BOTT	DATAROW	F	80
BOUNDARY ARRAY	BOUN	DATAROW	F	80
LOWER LIMIT ON EFFLUENT	CELO	DATAIJ	F	80
UPPER LIMIT ON EFFLUENT	CEUP	DATAIJ	F	80
INFLUENT	CINF	DATAIJ	F	80
INITIAL HEAD ELEVATION	ELEVCON	TABLE	F	121
LOWER LIMIT ON GROUNDWATER PUMPING	GPLO	DATAIJ	F	80
NON-ARKANSAS GROUNDWATER DEMAND	GWMI	DATAIJ	F	80
HYDRAULIC CONDUCTIVITY	HYCN	DATAROW	F	80
RIVER INDICATOR	IRIV	DATAIJ	F	80
OVERLAND INFLOW	OINF	DATAIJ	F	80
RIVER CONDUCTANCE	RIVCRIVS	DATAIJ	F	81
LOWER LIMIT ON RECHARGE FOR CH CELLS	RCHL	DATAIJ	F	80
RIVER STAGE	RIVCRIVS	DATAIJ	F	81
GROUND ELEVATION	TOPO	DATAROW	F	80
AGRICULTURAL WATER DEMAND	CON1990	DATAIJ	F	96
DEEP AQUIFER DEMAND	MDEEP	DATAIJ	F	96
SURFACE WATER DEMAND	WADS	DATAIJ	F	80
TOTAL WATER DEMAND	CON1990	DATAIJ	F	96

elevation, groundwater demand for non-Arkansas cells, hydraulic conductivity, river conductance, lower limit on recharge for constant head cells, river stage, and ground elevation. The data is obtained from parameter calibration studies by Ludwig (1988). The data for lower limit on effluent, influent values, and overland inflow was supplied by the U. S. Army Corps of Engineers (Appendix M). The data files for agricultural groundwater demand, deep aquifer demand, surface water demand, and total water demand came from the Soil Conservation Service (1986). The initial head that are actually used in the models were obtained by using a iterative procedure discussed in the accompanying report (Cantiller, et al., 1988). The data file for the river indicator array is created at the University of Arkansas. Appendix D provides an illustrative example of the procedure used to create this file.

A VILMA user is also required to have the data file specification information ready prior to a session. The filename, filetype, filemode, and the record length of each required data file has to be known. Table 3.2 is an example list that shows all the data file specifications. A list of this type may be used as a guide during a VILMA session.

3.3 Input Files

In this user's guide, an "input file" is used exclusively to mean any one of the following files: a) file for EARMODEL INPUT A, b) file elevation, groundwater demand for non-Arkansas cells, hydraulic conductivity, river conductance, lower limit on recharge for constant head cells, river stage, and ground elevation. The data is obtained from parameter calibration studies by Ludwig (1988). The data for lower limit on effluent, influent values, and overland inflow was supplied by the U. S. Army Corps of Engineers (Appendix M). The data files for agricultural groundwater demand, deep aquifer demand, surface water demand, and total water demand came from the Soil Conservation Service (1986). The initial head that are actually used in the models were obtained by using a iterative procedure discussed in the accompanying report (Cantiller, et al., 1988). The data file for the river indicator array is created at the University of Arkansas. Appendix D provides an illustrative example of the procedure used to create this file.

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3.3 Input Files

In this user's guide, an "input file" is used exclusively to mean any one of the following files: a) file for EARMODEL INPUT A, b) file for DATADEFN EXEC A, or c) file for RREACH DATA A. The user is required to have the file EARMODEL INPUT A in the A(191) disk of his CMS account. This input file describes the study area. It is a required file for the EARMODEL MODULE to execute properly. The detailed instructions for creating this file are included in Appendix E. A summary of those instructions is shown in Table 3.3. There are five different card types in this input file. One each of A-type, B-type, and D-type cards is required. There should be at least twenty C-type cards. When the monthly allocation model is implemented a total of twenty-two C-type cards are needed. If the entry for the IRDIND field of the D-type card is "1", then the file RREACH DATA A must be in the A(191) disk. Instructions for creating this file as well as the entries for the E-type cards is included in Appendix D. An example file for EARMODEL INPUT A for an EARCS model with monthly allocation is shown in Table 3.4. Table 3.6 is a good example of a RREACH DATA A file for the EARCS study area.

The VILMA user may not wish to interactively supply the data file specification during a session. This is possible provided that the data file definition exec (DATADEFN EXEC A) is in the A(191) disk. Only experienced CMS users are advised to create this file. An example of a DATADEFN EXEC A file is presented in Table 3.5.

Table 3.3

Summary of Instructions to Create the File EARMODEL INPUT A

CARD TYPE	FORMAT	FIELD NUMBER	FIELD NAME	DEFAULT VALUE
A	2X,2A4	1	NAMEMO	EARMODEL
	I10	2	IOTYPE	0
	F10.5	3	ALLOWL	0.0
	F10.5	4	ALLOWV	0.0
	F10.5	5	SCFACL	0.001
	F10.5	6	SCFACV	0.0001
B	I10	1	IMAXIM	70
	I10	2	JMAXIM	70
	I10	3	IPOSTP	0
	I10	4	IALLOC	0
C	A4	1	VANAME	applicable code
	I4	2	INVARI	0
	I3	3	NUFILE	0
	I2	4	INFLAG	0
	G10.1	5	CVALUE	0.0
	G10.1	6	CONVER	1.0
	I3	7	NLINHR	8
	5A4	8	FRMTIN	(3I3)
	I2	9	NSDBED	2
	I2	10	NSDAFD	0
	A4	11	DAYEAR	blank
	4A4	12	VUNITS	units consistent with VANAME
D	I10	1	ITNRIV	25
	I10	2	IRDIND	0
E	I3	1	KREACH	1
	25I3	2 to 26	KIRCDE	0

Table 3.4

Example File for EARMODEL INPUT A (CMA1990 with monthly allocation)

```
  CMA1990            0        0.0        0.0      0.001     0.0001
        66          52          1          1
ATOP        11 1                     8           (8G10.0) 3 0     FT
BOTT        12 1                     8           (8G10.1) 3 1     FT
BOUN        13 1       1.0           8             (26I3) 2 0
CELO        14 2          724.4628   8       (I3,I3,G9.1) 6 1     CUBIC FT PER SEC
CEUP   100  15 2                     8
CINF        16 2          724.4628   8      (I3,I3,G10.2) 6 2     CUBIC FT PER SEC
ELEV        17 3                     8                    3 1     FT
GPLO      2 18 3                     8                    1 2     ACRE-FT PER YEAR
GWMI        19 2         1121.2      9       (I5,I6,G6.1) 1 1     MGD
HYCN        20 1            0.0084   8          (6G12.1) 3 1     FT PER DAY
IRIV        21 2       1.0           8         (I3,I3,I3) 2 0
DINF        22 2          724.4628   8       (I3,I3,G7.1) 4 1     CUBIC FT PER SEC
RIVC        23 2            0.0084  16  (2I10,10X,G10.2) 6 2     FT**2 PER DAY
RCHL      2 24 2       1.0  0.0084   8       (I5,I5,I10) 7 01982CUBIC FT PER DAY
RIVS        25 2                    16       (2I10,G10.4) 3 1     FT
TOPO        26 1                     8           (8G10.0) 3 0     FT
WADA        27 2       1.0          24   (I2,I6,70X,I9) 5 01990ACRE-FT PER YEAR
WADD        28 2                    16  (I2,I8,77X,F9.2) 4 21982ACRE-FT PER YEAR
WADS        29 2                     8       (I3,I3,G8.2) 4 21982ACRE-FT PER YEAR
WADT        30 2       1.0          24   (I2,I6,79X,I9) 5 01990ACRE-FT PER YEAR
MTAD        31 2       1.0          24 (I2,I6,24X,I6,5I8) 5 01990ACRE-FT PER MO
MDAD        32 2                    16  (I2,I8,29X,6F8.2) 4 21982ACRE-FT PER MO
        16
  1  1
  2  2
  3  3
  4  4
  5  5
  6  6
  7  1  7
  8  6  8
  9  2  3  6  8  9
 10 10
 11  5 10 11
 12  5 10 11 12
 13  4  5 10 11 12 13
 14 14
 15  4  5 10 11 12 13 14 15
 16  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16
```

Table 3.5

Example File for DATADEFN EXEC A (CMA1990 with monthly allocation)

```
FILEDEF 11 DISK ATOP DATAROW F (RECFM F LRECL 80
FILEDEF 12 DISK BOTT DATAROW F (RECFM F LRECL 80
FILEDEF 13 DISK BOUN DATAROW F (RECFM F LRECL 80
FILEDEF 14 DISK CELO DATAIJ  F (RECFM F LRECL 80
FILEDEF 15 DISK CEUP DATAIJ F (RECFM F LRECL 80
FILEDEF 16 DISK CINF DATAIJ F (RECFM F LRECL 80
FILEDEF 17 DISK ELEVCON TABLE F (RECFM F LRECL 121
FILEDEF 18 DISK GPLO DATAIJ F (RECFM F LRECL 80
FILEDEF 19 DISK GWMI DATAIJ F (RECFM F LRECL 80
FILEDEF 20 DISK HYCN DATAROW F (RECFM F LRECL 80
FILEDEF 21 DISK IRIV DATAIJ F (RECFM F LRECL 80
FILEDEF 22 DISK OINF DATAIJ F (RECFM F LRECL 80
FILEDEF 23 DISK RIVCRIVS DATAIJ F (RECFM F LRECL 81
FILEDEF 24 DISK RCHL DATAIJ F (RECFM F LRECL 80
FILEDEF 25 DISK RIVCRIVS DATAIJ F (RECFM F LRECL 81
FILEDEF 26 DISK TOPO DATAROW F(RECFM F LRECL 80
FILEDEF 27 DISK CON1990 DATAIJ F(RECFM F LRECL 96
FILEDEF 28 DISK MDEEP DATAIJ F (RECFM F LRECL 96
FILEDEF 29 DISK WADS DATAIJ F (RECFM F LRECL 80
FILEDEF 30 DISK CON1990 DATAIJ F (RECFM F LRECL 96
FILEDEF 31 DISK CON1990 DATAIJ F (RECFM F LRECL 96
FILEDEF 32 DISK MDEEP DATAIJ F (RECFM F LRECL 96
```

Table 3.6

Example File for RREACH DATA A

```
 1  1
 2  2
 3  3
 4  4
 5  5
 6  6
 7  1  7
 8  6  8
 9  2  3  6  8  9
10 10
11  5 10 11
12  5 10 11 12
13  4  5 10 11 12 13
14 14
15  4  5 10 11 12 13 14 15
16  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16
```

V4LMI.N

CHAPTER IV

SIMPLE EXAMPLES

This chapter guides the user to two simple examples of actual VILMA sessions: a) an example type V session, and b) an example type VII session. The session types are consistent with the logic paths in Table 2.1. Everything that appears on the computer terminal is recorded in each example. In this document, such a record is called a console record. The type V example session is included in Appendix F while the type VII example session is found in Appendix G. In both sessions, it is assumed that the EARMODEL INPUT A file in Table 3.4 has been prepared and it exists as a file in the user's account. In these examples, it is also assumed that the user has already attended to the required tasks prior to the session. In addition, all the required files in RICH01 and the A(191) disk are there.

In Appendices F and G, the underscored words are the responses from the user. Those that are not underscored are prompts that appeared on the screen from the VILMA program package. In appendix F, take note that the user chose to apply the monthly allocation model. As a result, the list of twenty-two parameters appeared on the screen. In this example, the user elected to use the file DATADEFN EXEC A. This file was already created before the VILMA session. In particular, the file in Table 3.5 was in the A(191) disk during this example session. Notice that the file definition statements are actually captured in this console record. However, in the actual session, this echo of the file DATADEFN EXEC A flashes so quickly that it is not visible to the user. As the session continues, the user enters the model name and then his passwords. This lead to the successful completion of the session. At this point the user sees reminders on the screen as to how to proceed to ensure that the batch job starts. After this session, two files are sent automatically in the A(191) disk. These are the CMA1990 GAMS A file (Appendix H) and CMA1990 COMMANDS A (Appendix I). These files must not be erased until the results are already in the reader list.

A close inspection of Appendix G reveals that the user in this session has elected to interactively supply data file specifications. For each data parameter requirement, prompts on the screen are answered. Take note that the user was given a chance to correct a wrong entry for river conductance (see page G-7). After supplying all the necessary information interactively, this session was completed successfully. Exactly the same files (CMA1990 GAMS A and CMA1990 COMMANDS A) are created in the user's account.

These two examples illustrated the fact that two VILMA sessions could be totally different and yet create exactly the same GAMS and COMMANDS files. Although the console transcript may appear long for the type VII session example, the entire session was completed in less than ten minutes.

CHAPTER V

ADDITIONAL CONCEPTS

The VILMA program package generates a GAMS file code of the model formulation for the EARCS area. However, the use of VILMA is not limited to this study area. As long as the mathematical formulation is applicable to an area, VILMA can be applied. However, if modification in the constraint equations or the objective function is appropriate, the EARMODEL FORTRAN program needs to be revised to reflect this modification. A new module file must be created after such a revision. A user who has a working knowledge of GAMS and FORTRAN can do this modification. If changes are necessary, Table 5.1 provides a brief summary of the functions of the subprograms.

In the coding of EARMODEL FORTRAN program, the following dimensions were used: a) maximum row index = 70, b) maximum column index = 70 and c) maximum number of reaches = 25. The DIMENSION statements in the FORTRAN program need modification if the study area exceeds any of these values.

Post-processing by GAMSOP to obtain listings in map format is possible. It might be necessary to receive the model's LISTING file in

Table 5.1

Subprograms in EARMODEL FORTRAN program

SUBROUTINE	FUNCTION
BRDEAR	READS ALL THE REQUIRED DATA FILES AND ASSIGNS DEFAULT VALUES AS NECESSARY.
CTITLE	PRINTS THE TITLE SECTION OF THE GAMS OPTIMIZATION MODEL.
DOPTNS	PRINTS THE OPTIONS SECTION OF THE GAMS OPTIMIZATION MODEL.
ESETAL	PRINTS THE SET AND ALIAS SECTIONS OF THE GAMS OPTIMIZATION MODEL.
FACTOR	PRINTS THE SECTION OF THE GAMS OPTIMIZATION MODEL THAT ESTABLISHES THE CONVERSION FACTORS OF ALL DATA FILES AND THE APPROPRIATE FACTORS FOR SPECIFIC VARIABLES.
GRIVER	PRINTS THE SECTION OF THE GAMS OPTIMIZATION MODEL THAT ESTABLISHES THE RIVER CELL CODE INDICATOR ARRAY AND THE RIVER CODES TABLE.
HTABLE	PRINTS THE GAMS TABULAR FORM OF EACH OF THE TWENTY REQUIRED DATA FILES IN THE OPTIMIZATION MODEL. SUBROUTINE HTABLE ACCEPTS INPUT IN ROWWISE, I-J, OR GAMS TABULAR FORM FOR EITHER REAL OR INTEGER DATA. SUBROUTINE HTABLE FIRST OUTPUTS THE TABLE HEADER AND THEN CALLS SUBROUTINE HTABLV TO PRINT THE VALUES OF EACH CELL.
HTABLV	PRINTS THE VALUES OF THE DATA FOR EACH CELL IN THE GAMS TABULAR FORM REQUIRED BY THE GAMS OPTIMIZATION MODEL.
OCNVRT	PRINTS THE SECTION OF THE GAMS OPTIMIZATION MODEL THAT CONVERTS THE DATA INTO THE APPROPRIATE UNITS AND DELETES DATA OUTSIDE THE STUDY AREA.
PTRANS	PRINTS THE SECTION OF THE GAMS OPTIMIZATION MODEL THAT DEFINES THE INITIAL SATURATED THICKNESS AND MIDPOINT TRANSMISSIVITIES FOR EITHER CONFINED OR UNCONFINED AQUIFER SITUATIONS.
QVUPLO	PRINTS THE SECTION OF THE GAMS OPTIMIZATION MODEL THAT ESTABLISHES THE LOWER AND UPPER BOUNDS OF PUMPING, SURFACE WATER, EFFLUENT, HEAD AND RECHARGE.
RMODEL	PRINTS THE SECTION OF THE GAMS OPTIMIZATION MODEL THAT ESTABLISHES THE EQUATIONS FOR: (1) BOUNDS OF THE PUMPING, SURFACE WATER, EFFLUENT, HEAD AND RECHARGE, (2) STEADY-STATE EQUATION FOR EACH CELL IN THE STUDY AREA, (3) RIVER BALANCE FOR EACH RIVER REACH, AND (4) OBJECTIVE FUNCTION. RMODEL ALSO PRINTS THE SECTION OF THE GAMS OPTIMIZATION MODEL THAT SPECIFIES THE OPTIMIZATION CODE TO BE USED.
SPOSTP	PRINTS THE SECTION OF THE GAMS OPTIMIZATION MODEL THAT POSTPROCESSES THE RESULTS TO OBTAIN THE NECESSARY PARAMETERS.
TDSPLY	PRINTS THE SECTION OF THE GAMS OPTIMIZATION MODEL THAT DISPLAY THE SOLUTION AND IMPORTANT PARAMETERS.
VPSTPR	PRINTS THE COMMANDS FILE THAT IS CONSISTENT WITH THE REQUIREMENT AS INDICATED IN THE FILE EARMODEL INPUT A.
WALLOC	PRINTS THE SECTION OF THE GAMS MODEL THAT IMPLEMENTS THE MONTHLY ALLOCATION MODEL AS A POSTPROCESSOR TO THE OPTIMIZATION.

a temporary disk because of its size. Both the COMMANDS file and the model's LISTING file must be in the A disk. In this case, the A disk may either be the permanent A(191) disk or a temporary disk. The user must then link to RICH01. The post-processor is invoked by the command:

GAMSOP *name* LISTING A *map* LISTING A

In this command, *name* is the model name and *map* is not the same as *name*. The results in map format are then found in the current A disk as file *map* LISTING A.

DISCLAIMER

The VILMA package and supporting materials are the result of the work done at the University of Arkansas, Fayetteville, Arkansas. The programs have been routinely tested in the CMS environment using the IBM 4381 at the University of Arkansas Computing Center. VILMA gave successful results for the EARCS area modeling runs. However, the performance of VILMA can not be guaranteed when applied to a different study area. No warranties, either expressed or implied, are granted by the University of Arkansas to any holder of the VILMA materials. The authors, Computing Services, or the University of Arkansas do not accept any liability to whatever may arise either directly or indirectly, in whole or in part, through the use of VILMA.

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APPENDIX A

EARMODEL FORTRAN Program Listing

```
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
CC                       THE FORTRAN PROGRAM                          CC
CC                            EARMODEL                                CC
CC                      IS AN INTEGRAL PART OF                        CC
CC                                                                    CC
CC                              VILMA                                 CC
CC     (VIRTUALLY INTERACTIVE LARGE-SCALE MODEL FOR ARKANSAS)         CC
CC                                                                    CC
CC                                                                    CC
CC                        CODED AND TESTED                            CC
CC                               BY                                   CC
CC                      R. R. A. CANTILLER                            CC
CC                                                                    CC
CC                    UNDER THE SUPERVISION OF                        CC
CC                          R. C. PERALTA                             CC
CC                                                                    CC
CC              WATER RESOURCES MANAGEMENT LABORATORY                 CC
CC              AGRICULTURAL ENGINEERING DEPARTMENT                   CC
CC                     UNIVERSITY OF ARKANSAS                         CC
CC                  FAYETTEVILLE, ARKANSAS 72701                      CC
CC                   TELEPHONE: (501) 575-2848                        CC
CC                                                                    CC
CC                             FOR THE                                CC
CC                  U. S. ARMY CORPS OF ENGINEERS                     CC
CC                                                                    CC
CC                               AND                                  CC
CC                                                                    CC
CC                     U. S. GEOLOGICAL SURVEY                        CC
CC                      LITTLE ROCK, ARKANSAS                         CC
CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
CC    THE MAIN PROGRAM DIRECTS THE ACTION OF THE SUBPROGRAMS.         CC
CC    THE REQUIRED INPUT FILES ARE:                                   CC
CC     (1) EARMODEL INPUT A AND                                       CC
CC     (2) EXACTLY TWENTY DATA FILES WHEN NO MONTHLY ALLOCATION       CC
CC         IS IMPLEMENTED OR EXACTLY TWENTY-TWO DATA FILES WHEN       CC
CC         MONTHLY ALLOCATION IS IMPLEMENTED (SEE VILMA USER'S        CC
CC         GUIDE FOR DETAILS).                                        CC
CC    THE OUTPUT FILES ARE:                                           CC
CC     (1) AN OPTIMIZATION MODEL GAMS FILE AND                        CC
CC     (2) A COMMANDS FILE READY FOR USE IN POSTPROCESSING BY GAMSOP  CC
CC         OF THE TYPE INDICATED IN THE FILE EARMODEL INPUT A.        CC
CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
      COMMON /CARD A/ NAMEMO(2), IOTYPE, ALLOWL, ALLOWV, SCFACL, SCFACV
      COMMON /CARD B/ IMAXIM, JMAXIM, IPOSTP, IALLOC
```

```
      COMMON /CARD C/ VANAME(22), INVARI(22), NUFILE(22),
     1                INFLAG(22), CVALUE(22), CONVER(22),
     2                NLINHR(22), FRMTIN(22,5), NSDBED(22),
     3                NSDAFD(22), DAYEAR(22), VUNITS(22,4)
      COMMON /CARD D/ ITNRIV, IRDIND
      COMMON /CARD E/ KREACH(25), KIRCDE(25,25)
      COMMON /BLOCK 1/ IT, IR
      COMMON /BLOCK 2/ RTABLE(70,70), ITABLE(70,70), JT(70)
      COMMON /BLOCK 3/ RMTABL(6,70,70), IMTABL(6,70,70)
      CALL BRDEAR
      CALL CTITLE
      CALL DOPTNS
      CALL ESETAL
      CALL FACTOR
      CALL GRIVER
      CALL HTABLE
      CALL OCNVRT
      CALL PTRANS
      CALL QVUPLO
      CALL RMODEL
      CALL SPOSTP
      IF(IALLOC .EQ. 1) CALL WALLOC
      CALL TDSPLY
      CALL VPSTPR
      STOP
      END

CC                                                                      CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                      CC
CC    SUBROUTINE BRDEAR READS ALL THE REQUIRED DATA FILES AND           CC
CC    ASSIGNS DEFAULT VALUES AS NECESSARY.                              CC
CC                                                                      CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                      CC
      SUBROUTINE BRDEAR
      COMMON /CARD A/ NAMEMO(2), IOTYPE, ALLOWL, ALLOWV, SCFACL, SCFACV
      COMMON /CARD B/ IMAXIM, JMAXIM, IPOSTP, IALLOC
      COMMON /CARD C/ VANAME(22), INVARI(22), NUFILE(22),
     1                INFLAG(22), CVALUE(22), CONVER(22),
     2                NLINHR(22), FRMTIN(22,5), NSDBED(22),
     3                NSDAFD(22), DAYEAR(22), VUNITS(22,4)
      COMMON /CARD D/ ITNRIV, IRDIND
      COMMON /CARD E/ KREACH(25), KIRCDE(25,25)
      DIMENSION VANARE(22), INVARE(22), NUFIRE(22),
     1          INFLRE(22), CVALRE(22), CONVRE(22),
     2          NLINRE(22), FRMTRE(22,5), NSDBRE(22),
     3          NSDARE(22), DAYERE(22), VUNIRE(22,4)
      DIMENSION VANART(22), INVART(22), NUFIRT(22),
     1          INFLRT(22), CVALRT(22), CONVRT(22),
     2          NLINRT(22), FRMTRT(22,5), NSDBRT(22),
     3          NSDART(22), DAYERT(22), VUNIRT(22,4)
      REAL*4 NAMEMO, VANAME, FRMTIN, VUNITS, VANARE, FRMTRE, VUNIRE
```

```
      REAL*4 VANART, FRMTRT, VUNIRT, NAM(2), VAN(22), BLNK
      REAL*4 FT(4), APY(4), AFPY(4), APFPY(4), AFPM(4), FMT(5)
      REAL*4 DAYEAR, DAYERE, DAYERT
      DATA NAM/'EARM', 'ODEL'/
      DATA VAN/'ATOP', 'BOTT', 'BOUN', 'CELO', 'CEUP', 'CINF',
     1         'ELEV', 'GPLO', 'GWMI', 'HYCN', 'IRIV', 'OINF',
     2         'RIVC', 'RCHL', 'RIVS', 'TOPO', 'WADA', 'WADD',
     3         'WADS', 'WADT', 'MTAD','MDAD'/
      DATA BLNK/'    '/
      DATA FT/'FT  ','    ','    ','    '/
      DATA APY/'ACRE',' PER',' YEA','R   '/
      DATA AFPY/'ACRE','-FT ','PER ','YEAR'/
      DATA APFPY/'AC P','ER F','T PE','R YR'/          output listing type
      DATA AFPM/'ACRE','-FT ','PER ','MO  '/          Allowable length tol
      DATA FMT/'3I3 ','    ','    ','    ','    '/
      READ(5,5000) (NAMEMO(N), N=1,2), IOTYPE, ALLOWL,
     1            ALLOWV, SCFACL, SCFACV (scaling factors for length & volume)
      READ(5,5001) IMAXIM, JMAXIM, IPOSTP, IALLOC
      IF(NAMEMO(1) .EQ. BLNK .AND. NAMEMO(2) .EQ. BLNK) GO TO 13
      GO TO 14
   13 DO 101 L=1,2
  101 NAMEMO(L) = NAM(L)
   14 IF(SCFACL .EQ. 0.0) SCFACL = 0.001
      IF(SCFACV .EQ. 0.0) SCFACV = 0.0001
      IF(IMAXIM .EQ. 0) IMAXIM = 70
      IF(JMAXIM .EQ. 0) JMAXIM = 70
      IF(IALLOC .EQ. 1) MIC = 22
      IF(IALLOC .NE. 1) MIC = 20
      DO 102 IC=1,MIC
      READ(5,5002) VANARE(IC), INVARE(IC), NUFIRE(IC),
     1            INFLRE(IC), CVALRE(IC), CONVRE(IC),
     2            NLINRE(IC), (FRMTRE(IC,J), J=1,5), NSDBRE(IC),
     3            NSDARE(IC), DAYERE(IC), (VUNIRE(IC,J), J=1,4)
  102 CONTINUE
      DO 103 M=1,MIC
      DO 104 IC=1,MIC
      IF(VANARE(IC) .NE. VAN(M)) GO TO 104
      VANART(M) = VANARE(IC)
      INVART(M) = INVARE(IC)
      NUFIRT(M) = NUFIRE(IC)
      INFLRT(M) = INFLRE(IC)
      CVALRT(M) = CVALRE(IC)
      CONVRT(M) = CONVRE(IC)
      NLINRT(M) = NLINRE(IC)
      NSDBRT(M) = NSDBRE(IC)
      NSDART(M) = NSDARE(IC)
      DAYERT(M) = DAYERE(IC)
      DO 155 J=1,5
      FRMTRT(M,J) = FRMTRE(IC,J)
  155 CONTINUE
      DO 105 J=1,4
      VUNIRT(M,J) = VUNIRE(IC,J)
  105 CONTINUE
  104 CONTINUE
  103 CONTINUE
```

Cards A & B

Default values

(E-2)

```
      DO 106 IC=1,MIC
      VANAME(IC) = VANART(IC)
      INVARI(IC) = INVART(IC)
      NUFILE(IC) = NUFIRT(IC)
      INFLAG(IC) = INFLRT(IC)
      CVALUE(IC) = CVALRT(IC)
      CONVER(IC) = CONVRT(IC)
      NLINHR(IC) = NLINRT(IC)
      NSDBED(IC) = NSDBRT(IC)
      NSDAFD(IC) = NSDART(IC)
      DAYEAR(IC) = DAYERT(IC)
      DO 177 J=1,5
      FRMTIN(IC,J) = FRMTRT(IC,J)
  177 CONTINUE
      DO 107 J=1,4
      VUNITS(IC,J) = VUNIRT(IC,J)
  107 CONTINUE
  106 CONTINUE
      DO 108 M=1,MIC
      IF(NUFILE(M) .EQ. 0) NUFILE(M) = M + 10
      IF(CONVER(M) .EQ. 0.0) CONVER(M) = 1.0
      IF(NLINHR(M) .EQ. 0) NLINHR(M) = 8
      IF(NSDBED(M) .EQ. 0) NSDBED(M) = 2
  108 CONTINUE
      DO 109 MM=1,MIC
      IND = 0
      INDV = 0
      M = MM
      DO 910 J=1,5
      IF(FRMTIN(M,J) .NE. BLNK) IND=1
  910 CONTINUE
      DO 110 J=1,4
      IF(VUNITS(M,J) .NE. BLNK) INDV=1
  110 CONTINUE
      IF(IND .EQ. 1 .AND. INDV .EQ. 1) GO TO 109
      DO 111 J=1,5
      IF(J .EQ. 5) GO TO 9
      IF(IND .EQ. 1 .AND. INDV .EQ. 0) GO TO 7
      IF(IND .EQ. 0 .AND. INDV .EQ. 1) GO TO 8
    7 GO TO (1,1,2,3,3,3,1,3,3,4,2,3,5,3,1,1,3,3,3,3,6,6),M
    1 VUNITS(M,J) = FT(J)
      GO TO 9
    2 VUNITS(M,J) = BLNK
      GO TO 9
    3 VUNITS(M,J) = AFPY(J)
      GO TO 9
    4 VUNITS(M,J) = APFPY(J)
      GO TO 9
    5 VUNITS(M,J) = APY(J)
      GO TO 9
    6 VUNITS(M,J) = AFPM(J)
    9 IF(IND .EQ. 1) GO TO 111
    8 FRMTIN(M,J) = FMT(J)
  111 CONTINUE
  109 CONTINUE
```

cards

```
      READ(5,5003) ITNRIV, IRDIND
      IF(ITNRIV .EQ. 0) ITNRIV = 25
      DO 112 K=1,25
  112 KREACH(K) = K
      DO 113 K=1,25
      DO 113 KK=1,25
  113 KIRCDE(K,KK) = 0
      DO 114 K=1,ITNRIV
      DO 114 KK=1,ITNRIV
  114 KIRCDE(K,KK) = 0
      DO 115 KI=1,ITNRIV
      IF(IRDIND .EQ. 1) GO TO 15
      READ(5,5004) KREACH(KI), (KIRCDE(KREACH(KI),KK), KK=1,ITNRIV)
      GO TO 115
   15 READ(4,5004) KREACH(KI), (KIRCDE(KREACH(KI),KK), KK=1,ITNRIV)
  115 CONTINUE
 5000 FORMAT (2X,2A4,I10,4F10.5)
 5001 FORMAT (4I10)
 5002 FORMAT (A4, I4, I3, I2, 2G10.1, I3, 5A4, 2I2, A4, 4A4)
 5003 FORMAT (2I10)
 5004 FORMAT (I3, 25I3)
      RETURN
      END

CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
CC    SUBROUTINE CTITLE PRINTS THE TITLE SECTION OF THE GAMS          CC
CC    OPTIMIZATION MODEL.                                             CC
CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
      SUBROUTINE CTITLE
      COMMON /CARD A/ NAMEMO(2), IOTYPE, ALLOWL, ALLOWV, SCFACL, SCFACV
      REAL*4 NAMEMO
      WRITE(6,5000) NAMEMO
      WRITE(6,5001)
      WRITE(6,5002)
      WRITE(6,5003)
 5000 FORMAT('$TITLE EASTERN ARKANSAS COMPREHENSIVE STUDY AREA ',
     1'(MODEL ', 2A4, ')'/'*&&&&&&&&&&&&&&&&&',
     2'&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*'/
     3'*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&',
     4'&&&&&&&&&&&*'/'*&&&&&&&&&&&&&&', T56, '&&&&&&&&&&&&&&&*'/
     5'*&&&&&&&&&&&&&&', T27, 'VILMA''S GAMS MODEL', T56,
     6'&&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&&', T56, '&&&&&&&&&&&&&&&*'/
     7'*&&&&&&&&&&&&&&', T28, 'CODED AND TESTED', T56,
     8'&&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&&', T35, 'BY', T56,
     9'&&&&&&&&&&&&&&&*')
 5001 FORMAT('*&&&&&&&&&&&&&&', T27, 'R. R. A. CANTILLER', T56,
     1'&&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&&', T56, '&&&&&&&&&&&&&&&*'/
     2'*&&&&&&&&&&&&&&', T24, 'UNDER THE SUPERVISION OF', T56,
     3'&&&&&&&&&&&&&&&*'/  '*&&&&&&&&&&&&&&', T29, 'R. C. PERALTA', T56,
```

cards

```
     4'&&&&&&&&&&&&&&*''/'*&&&&&&&&&&&&&', T56, '&&&&&&&&&&&&&&*'/
     5'*&&&&&&&&&&&&&', T17, 'WATER RESOURCES MANAGEMENT LABORATORY',
     6T56, '&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&', T18,
     7'AGRICULTURAL ENGINEERING DEPARTMENT', T56, '&&&&&&&&&&&&&&*'/
     8'*&&&&&&&&&&&&&', T24, 'UNIVERSITY OF ARKANSAS', T56,
     9'&&&&&&&&&&&&&&*')
 5002 FORMAT('*&&&&&&&&&&&&&', T21, 'FAYETTEVILLE, ARKANSAS 72701',
     1T56, '&&&&&&&&&&&&&&*'/ '*&&&&&&&&&&&&&', T22,
     2'TELEPHONE: (501) 575-2848', T56, '&&&&&&&&&&&&&&*'/
     3'*&&&&&&&&&&&&&', T56, '&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&',
     4T32, 'FOR THE', T56, '&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&', T21,
     5'U. S. ARMY CORPS OF ENGINEERS', T56, '&&&&&&&&&&&&&&*'/
     6'*&&&&&&&&&&&&&', T56, '&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&', T34,
     7'AND', T56, '&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&',
     8T56, '&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&', T24,
     9'U. S. GEOLOGICAL SURVEY', T56, '&&&&&&&&&&&&&&*')
 5003 FORMAT('*&&&&&&&&&&&&&', T25, 'LITTLE ROCK, ARKANSAS', T56,
     1'&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&', T56, '&&&&&&&&&&&&&&*'/
     2'*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&',
     3'&&&&&&&&&&&&&&&&&&&&&*'/'*&&&&&&&&&&&&&&&&&&&&&&',
     4'&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*')
      RETURN
      END

CC                                                                    CC
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CC                                                                    CC
CC    SUBROUTINE DOPTNS PRINTS THE OPTIONS SECTION OF THE GAMS        CC
CC    OPTIMIZATION MODEL.                                             CC
CC                                                                    CC
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CC                                                                    CC
      SUBROUTINE DOPTNS
      COMMON /CARD A/ NAMEMO(2), IOTYPE, ALLOWL, ALLOWV, SCFACL, SCFACV
      WRITE(6,5000)
      IF(IOTYPE .EQ. 1) GO TO 2
    1 WRITE(6,5001)
      GO TO 3
    2 WRITE(6,5002)
 5000 FORMAT(/' OPTION RESLIM    = 10000000;'/' OPTION ITERLIM   ',
     1'= 10000000;'/' OPTION LIMROW    = 0;'/
     2' OPTION LIMCOL    = 0;'/' OPTION SYSOUT    = OFF;')
 5001 FORMAT(' OPTION SOLPRINT = OFF;'/)
 5002 FORMAT(' OPTION SOLPRINT = ON;'/)
    3 RETURN
      END

CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
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CC                                                                    CC
CC    SUBROUTINE ESETAL PRINTS THE SET AND ALIAS SECTIONS OF THE      CC
CC    GAMS OPTIMIZATION MODEL.                                        CC
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CC                                                                    CC
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CC                                                                    CC
      SUBROUTINE ESETAL
      COMMON /CARD B/ IMAXIM, JMAXIM, IPOSTP, IALLOC
      COMMON /CARD D/ ITNRIV, IRDIND
      WRITE(6,5000) IMAXIM, JMAXIM, ITNRIV
 5000 FORMAT(' SET', T6,'I  STUDY AREA ROWS     /1*', I2, '/'/
     1T6, 'J  STUDY AREA COLUMNS  /1*', I2, '/'/
     2T6, 'K  RIVER REACH NUMBER  /1*', I2, '/'//
     3' ALIAS', T8, '(I,IL), (J,JL), (K,KK,KL);')
      RETURN
      END

CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
CC    SUBROUTINE FACTOR PRINTS THE SECTION OF THE GAMS                CC
CC    OPTIMIZATION MODEL THAT ESTABLISHES THE CONVERSION              CC
CC    FACTORS OF ALL DATA FILES AND THE APPROPRIATE FACTORS           CC
CC    FOR SPECIFIC VARIABLES.                                         CC
CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
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CC                                                                    CC
      SUBROUTINE FACTOR
      COMMON /CARD A/ NAMEMO(2), IOTYPE, ALLOWL, ALLOWV, SCFACL, SCFACV
      COMMON /CARD C/ VANAME(22), INVARI(22), NUFILE(22),
     1                INFLAG(22), CVALUE(22), CONVER(22),
     2                NLINHR(22), FRMTIN(22,5), NSDBED(22),
     3                NSDAFD(22), DAYEAR(22), VUNITS(22,4)
      REAL*4 VUNITS
      WRITE(6,6000) ALLOWL, ALLOWV, SCFACL, SCFACV, INVARI(14)
      IF(INVARI(5) .EQ. 0) GO TO 99
      WRITE(6,6001) (((VUNITS(I,J), J=1,4), CONVER(I)), I=1,2),
     1 (((VUNITS(I,J), J=1,4), CONVER(I)), I=4,6,2)
      GO TO 98
   99 WRITE(6,6099) (((VUNITS(I,J), J=1,4), CONVER(I)), I=1,2),
     1 (((VUNITS(I,J), J=1,4), CONVER(I)), I=4,6)
   98 IF(INVARI(8) .EQ. 2) GO TO 92
      WRITE(6,6002) (((VUNITS(I,J), J=1,4), CONVER(I)), I=7,10),
     1 (VUNITS(12,J), J=1,4), CONVER(12)
      GO TO 93
   92 WRITE(6,6022) (VUNITS(7,J), J=1,4), CONVER(7),
     1(((VUNITS(I,J), J=1,4), CONVER(I)), I=9,10),
     2(VUNITS(12,J), J=1,4), CONVER(12)
   93 WRITE(6,6003) (((VUNITS(I,J), J=1,4), CONVER(I)), I=13,17)
      WRITE(6,6004) (((VUNITS(I,J), J=1,4), CONVER(I)), I=18,20)
 6000 FORMAT(/' SCALAR', T10, 'ALLOWL  LENGTH ALLOWANCE', T53, '/',
     1F10.5, T64, '/'/T10,'ALLOWV  VOLUME ALLOWANCE', T53, '/',
     2F10.5, T64, '/'/T10,'SCFACL  SCALING FACTOR FOR LENGTH', T53,
     3'/', F10.5, T64, '/'/T10, 'SCFACV  SCALING FACTOR FOR VOLUME',
     4T53, '/', F10.5, T64, '/'/T10, 'RCFAC   FACTOR FOR ',
```

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     5'USGS-SUPPLIED RECHARGE', T53, '/', I10, T64, '/')
6099 FORMAT(' SCALAR  CFATOP  CONVERSION FACTOR FROM ', 4A4, T58,
    1'TO FT', T82, '/', F10.5, T92, '/'/
    2T10, 'CFBOTT  CONVERSION FACTOR FROM ', 4A4, T58,
    3'TO FT', T82, '/', F10.5, T92, '/'/
    4T10, 'CFCELO  CONVERSION FACTOR FROM ', 4A4, T58,
    5'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/'/
    6T10, 'CFCEUP  CONVERSION FACTOR FROM ', 4A4, T58,
    7'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/'/
    8T10, 'CFCINF  CONVERSION FACTOR FROM ', 4A4, T58,
    9'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/')
6001 FORMAT(' SCALAR  CFATOP  CONVERSION FACTOR FROM ', 4A4, T58,
    1'TO FT', T82, '/', F10.5, T92, '/'/
    2T10, 'CFBOTT  CONVERSION FACTOR FROM ', 4A4, T58,
    3'TO FT', T82, '/', F10.5, T92, '/'/
    4T10, 'CFCELO  CONVERSION FACTOR FROM ', 4A4, T58,
    5'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/'/
    6T10, 'CFCINF  CONVERSION FACTOR FROM ', 4A4, T58,
    7'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/')
6002 FORMAT(T10, 'CFELEV  CONVERSION FACTOR FROM ', 4A4, T58,
    1'TO FT', T82, '/', F10.5, T92, '/'/
    2T10, 'CFGPLO  CONVERSION FACTOR FROM ', 4A4, T58,
    3'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/'/
    4T10, 'CFGWMI  CONVERSION FACTOR FROM ', 4A4, T58,
    5'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/'/
    6T10, 'CFHYCN  CONVERSION FACTOR FROM ', 4A4, T58,
    7'TO ACRE PER FT PER YEAR', T82, '/', F10.5, T92, '/'/
    8T10, 'CFOINF  CONVERSION FACTOR FROM ', 4A4, T58,
    9'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/')
6022 FORMAT(T10, 'CFELEV  CONVERSION FACTOR FROM ', 4A4, T58,
    1'TO FT', T82, '/', F10.5, T92, '/'/
    2T10, 'CFGWMI  CONVERSION FACTOR FROM ', 4A4, T58,
    3'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/'/
    4T10, 'CFHYCN  CONVERSION FACTOR FROM ', 4A4, T58,
    5'TO ACRE PER FT PER YEAR', T82, '/', F10.5, T92, '/'/
    6T10, 'CFOINF  CONVERSION FACTOR FROM ', 4A4, T58,
    7'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/')
6003 FORMAT(T10, 'CFRIVC  CONVERSION FACTOR FROM ', 4A4, T58,
    1'TO ACRE PER YEAR', T82, '/', F10.5, T92, '/'/
    2T10, 'CFRCHL  CONVERSION FACTOR FROM ', 4A4, T58,
    3'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/'/
    4T10, 'CFRIVS  CONVERSION FACTOR FROM ', 4A4, T58,
    5'TO FT', T82, '/', F10.5, T92, '/'/
    6T10, 'CFTOPO  CONVERSION FACTOR FROM ', 4A4, T58,
    7'TO FT', T82, '/', F10.5, T92, '/'/
    8T10, 'CFWADA  CONVERSION FACTOR FROM ', 4A4, T58,
    9'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/')
6004 FORMAT(T10, 'CFWADD  CONVERSION FACTOR FROM ', 4A4, T58,
    1'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/'/
    2T10, 'CFWADS  CONVERSION FACTOR FROM ', 4A4, T58,
    3'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/'/
    4T10, 'CFWADT  CONVERSION FACTOR FROM ', 4A4, T58,
    5'TO ACRE-FT PER YEAR', T82, '/', F10.5, T92, '/')
     RETURN
     END
```

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CC                                                                    CC
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CC                                                                    CC
CC    SUBROUTINE GRIVER PRINTS THE SECTION OF THE GAMS                CC
CC    OPTIMIZATION MODEL THAT ESTABLISHES THE RIVER CELL CODE         CC
CC    INDICATOR ARRAY AND THE RIVER CODES TABLE.                      CC
CC                                                                    CC
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CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
      SUBROUTINE GRIVER
      COMMON /CARD D/ ITNRIV, IRDIND
      COMMON /CARD E/ KREACH(25), KIRCDE(25,25)
      COMMON /BLOCK 1/ IT, IR
      WRITE(6,6000)
      DO 201 K=1,ITNRIV
  201 KREACH(K) = K
      DO 202 K=1,ITNRIV
      IF(K .EQ. 1) GO TO 2
      IF(K .EQ. ITNRIV) GO TO 3
    1 WRITE(6,6003) K,K
      GO TO 202
    2 WRITE(6,6001) K,K
  202 CONTINUE
    3 WRITE(6,6002) K,K
      WRITE(6,6004)
      IR = 1
      CALL HTABLV
      IR = 0
 6000 FORMAT(/' PARAMETER IRCODE(K)  RIVER CELL CODE INDICATOR'/)
 6001 FORMAT(T11,'/', T12, I2, T24, I2)
 6002 FORMAT(T12, I2, T24, I2, T26, '/')
 6003 FORMAT(T12, I2, T24, I2)
 6004 FORMAT(/' TABLE  IRKC(K,KK)  RIVER CODES FOR REACH K'/)
      RETURN
      END

CC                                                                    CC
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CC                                                                    CC
CC    SUBROUTINE HTABLE PRINTS THE GAMS TABULAR FORM OF EACH          CC
CC    OF THE TWENTY REQUIRED DATA FILES IN THE OPTIMIZATION MODEL.    CC
CC    SUBROUTINE HTABLE ACCEPTS INPUT IN ROWWISE, I-J, OR GAMS        CC
CC    TABULAR FORM FOR EITHER REAL OR INTEGER DATA.                   CC
CC    SUBROUTINE HTABLE FIRST OUTPUTS THE TABLE HEADER AND THEN       CC
CC    CALLS SUBROUTINE HTABLV TO PRINT THE VALUES OF EACH CELL.       CC
CC                                                                    CC
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CC                                                                    CC
      SUBROUTINE HTABLE
      COMMON /CARD A/ NAMEMO(2), IOTYPE, ALLOWL, ALLOWV, SCFACL, SCFACV
```

```
      COMMON /CARD B/ IMAXIM, JMAXIM, IPOSTP, IALLOC
      COMMON /CARD C/ VANAME(22), INVARI(22), NUFILE(22),
     1                INFLAG(22), CVALUE(22), CONVER(22),
     2                NLINHR(22), FRMTIN(22,5), NSDBED(22),
     3                NSDAFD(22), DAYEAR(22), VUNITS(22,4)
      COMMON /CARD D/ ITNRIV, IRDIND
      COMMON /CARD E/ KREACH(25), KIRCDE(25,25)
      COMMON /BLOCK 1/ IT, IR
      COMMON /BLOCK 2/ RTABLE(70,70), ITABLE(70,70), JT(70)
      REAL*4 TEMP(30), NAME(22), FRMT(5), FFRMT(2), LAST, TAB, DUM
      DATA NAME/'ATOP','BOTT','BOUN','CELO','CEUP','CINF','ELEV',
     1'GPLO','GWMI','HYCN','IRIV','OINF','RIVC','RCHL','RIVS','TOPO',
     2'WADA','WADD','WADS','WADT','MTAD','MDAD'/
      DATA LAST/'LAST'/
      DATA TAB/' TAB'/
      DATA FFRMT/'(30A','4)  '/
      DO 900 IT=1,20
      IGAMS = 0
      DO 800 I=1,70
      DO 800 J=1,70
      RTABLE(I,J) = 0.0
      ITABLE(I,J) = 0
  800 CONTINUE
      IF(INFLAG(IT) .EQ. 0) GO TO 100
      IF(IT .EQ. 5 .AND. INVARI(5) .NE. 0) GO TO 900
      IF(IT .EQ. 8 .AND. INVARI(8) .EQ. 2) GO TO 900
      INU = NUFILE(IT)
      DO 501 J=1,5
  501 FRMT(J) = FRMTIN(IT,J)
      NL = NLINHR(IT)
      DO 31 ID=1,NL
      READ(INU,4001) DUM
   31 CONTINUE
   39 IF(INFLAG(IT) .EQ. 1) GO TO 200
      IF(INFLAG(IT) .EQ. 2) GO TO 300
      IF(INFLAG(IT) .EQ. 3) GO TO 400
  100 WRITE(6,7000) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4),
     1NAME(IT), CVALUE(IT)
      GO TO 900
  200 DO 201 I=1,IMAXIM
      IF(CVALUE(IT) .NE. 1.0) GO TO 210
      READ(INU,FRMT) (ITABLE(I,J), J=1,JMAXIM)
      GO TO 201
  210 READ(INU,FRMT) (RTABLE(I,J), J=1,JMAXIM)
  201 CONTINUE
      GO TO 51
  300 DO 102 II=1,4900
      IF(CVALUE(IT) .NE. 1.0) GO TO 330
      READ(INU,FRMT) I,J,IA
      GO TO 331
  330 READ(INU,FRMT) I,J,A
  331 IF(I .LT. 0) GO TO 51
      IF(CVALUE(IT) .NE. 1.0) GO TO 101
      ITABLE(I,J) = IA
      GO TO 102
```

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101 RTABLE(I,J) = A
102 CONTINUE
    GO TO 51
400 IGAMS = 1
    GO TO 52
 51 IF(CVALUE(IT) .EQ. 1.0) GO TO 52
    DO 99 I=1,IMAXIM
    DO 99 J=1,JMAXIM
    IF(RTABLE(I,J) .LE. -10E10 .OR.
   1   RTABLE(I,J) .GE.  10E10) RTABLE(I,J) = 0.0
 99 CONTINUE
 52 GO TO(1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20),IT
  1 WRITE(6, 7001) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
  2 WRITE(6, 7002) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
  3 WRITE(6, 7003) NAME(IT), DAYEAR(IT)
    GO TO 23
  4 WRITE(6, 7004) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
  5 IF(INVARI(5) .NE. 0) GO TO 900
    WRITE(6, 7005) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
  6 WRITE(6, 7006) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
  7 WRITE(6, 7007) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
  8 IF(INVARI(8) .EQ. 2) GO TO 900
    WRITE(6, 7008) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
  9 WRITE(6, 7009) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
 10 WRITE(6, 7010) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
 11 WRITE(6, 7011) NAME(IT), DAYEAR(IT)
    GO TO 23
 12 WRITE(6, 7012) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
 13 WRITE(6, 7013) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
 14 WRITE(6, 7014) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
 15 WRITE(6, 7015) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
 16 WRITE(6, 7016) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
 17 WRITE(6, 7017) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
 18 WRITE(6, 7018) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
 19 WRITE(6, 7019) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
    GO TO 23
 20 WRITE(6, 7020) NAME(IT), DAYEAR(IT), (VUNITS(IT,J),J=1,4)
 23 IF(IGAMS .EQ. 0) GO TO 24
 25 READ(INU, FFRMT) TEMP
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      IF(TEMP(1) .EQ. TAB) GO TO 25
      IF(TEMP(1) .EQ. LAST) GO TO 900
      WRITE(6, FFRMT) TEMP
      GO TO 25
   24 CALL HTABLV
  900 CONTINUE
 4001 FORMAT(A4)
 7000 FORMAT(/' PARAMETER ', A4, '(I,J)  ', A4, ' ', ' (', 4A4, ');'/
     1T12, A4, '(I,J) = ', F10.5)
 7001 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'AQUIFER TOP IN ', 4A4)
 7002 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'AQUIFER BOTTOM IN ', 4A4/)
 7003 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'BOUNDARY ARRAY'/)
 7004 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'LOWER LIMIT ON EFFLUENT IN ', 4A4/)
 7005 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'UPPER LIMIT ON EFFLUENT IN ', 4A4/)
 7006 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'INFLUENT IN ', 4A4/)
 7007 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'INITIAL HEAD ELEVATION IN ', 4A4/)
 7008 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'LOWER LIMIT ON GROUNDWATER PUMPING IN ', 4A4/)
 7009 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'GROUNDWATER DEMAND OF NON-ARKANSAS CELLS IN ', 4A4/)
 7010 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'HYDRAULIC CONDUCTIVITY IN ', 4A4/)
 7011 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'RIVER INDICATOR ARRAY'/)
 7012 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'OVERLAND INFLOW IN ', 4A4/)
 7013 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'RIVER CONDUCTANCE IN ', 4A4/)
 7014 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'LOWER LIMIT ON RECHARGE FOR CONSTANT HEAD CELLS IN ', 4A4/)
 7015 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'RIVER STAGE IN ', 4A4/)
 7016 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'GROUND ELEVATION IN ', 4A4/)
 7017 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'AGRICULTURAL DEMAND IN ', 4A4/)
 7018 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'DEEP AQUIFER DEMAND IN ', 4A4/)
 7019 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'SURFACE WATER DEMAND IN ', 4A4/)
 7020 FORMAT(/' TABLE  ', A4, '(I,J)  ', A4, ' ',
     1'TOTAL WATER DEMAND IN ', 4A4/)
      RETURN
      END

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CC                                                                    CC
CC    SUBROUTINE HTABLV PRINTS THE VALUES OF THE DATA FOR EACH          CC
CC    CELL IN THE GAMS TABULAR FORM REQUIRED BY THE GAMS                CC
CC    OPTIMIZATION MODEL.                                               CC
CC                                                                    CC
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CC                                                                    CC
      SUBROUTINE HTABLV
      COMMON /CARD B/ IMAXIM, JMAXIM, IPOSTP, IALLOC
      COMMON /CARD C/ VANAME(22), INVARI(22), NUFILE(22),
     1                INFLAG(22), CVALUE(22), CONVER(22),
     2                NLINHR(22), FRMTIN(22,5), NSDBED(22),
     3                NSDAFD(22), DAYEAR(22), VUNITS(22,4)
      COMMON /CARD D/ ITNRIV, IRDIND
      COMMON /CARD E/ KREACH(25), KIRCDE(25,25)
      COMMON /BLOCK 1/ IT, IR
      COMMON /BLOCK 2/ RTABLE(70,70), ITABLE(70,70), JT(70)
      REAL*4 JTFMT(3), JTFMT2(5), FA(16), FI(12), FR(12), JTFMT1(3)
      DATA FA/'(5X,','(/2X',',''+''',',2X,',',1X,',')   ','0)  ','1)  ',
     1       '(I5,','.1) ','.2) ','0.1)','0.2','1.1)','1.2)', '(4X,'/
      DATA FI/'36I3','36I3','36I3','27I4','22I5','18I6',
     1       '15I7','13I8','12I9','11I1','10I1','9I12'/
      DATA FR/'36F3','36F3','36F3','27F4','22F5','18F6',
     1       '15F7','13F8','12F9','11F1','10F1','9F12'/
      IH = 0
      IE = 0
      IF(IR .EQ. 1) GO TO 1
      JPR = NSDBED(IT) + NSDAFD(IT) + 3
      JPI = NSDBED(IT) + 2
      JP = 110 / (NSDBED(IT) + NSDAFD(IT) + 3)
      IMAX = IMAXIM
      JMAX = JMAXIM
      GO TO 2
    1 JP = 110 / 3
      IMAX = ITNRIV
      JMAX = ITNRIV
    2 DO 102 J=1,JMAX
  102 JT(J) = J
      DO 103 J=1,JMAX,JP
      JE = J + JP - 1
      IF(JE .GE. JMAX) JE = JMAX
      IHB = 0
      DO 104 I=1,IMAX
      DO 105 JJ=J,JE
      IF(IR .EQ. 1) GO TO 3
      GO TO 4
    3 IF(KIRCDE(I,JJ) .NE. 0) GO TO 82
      GO TO 105
    4 IF(CVALUE(IT) .NE. 1.0) GO TO 50
      IF(ITABLE(I,JJ) .NE. 0) GO TO 82
      GO TO 105
   50 IF(RTABLE(I,JJ) .NE. 0.0) GO TO 82
  105 CONTINUE
      GO TO 104
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   82 IE = 1
      IF(IH .EQ. 1 .AND. IE .EQ. 1 .AND. IHB .EQ. 0) GO TO 83
      IF(IH .EQ. 1 .AND. IE .EQ. 1 .AND. IHB .EQ. 1) GO TO 84
      IF(IH .EQ. 0 .AND. IE .EQ. 0) GO TO 104
      IF(IR .NE. 1) GO TO 4002
      WRITE(6,6002) (JT(JJ),JJ=J,JE)
      GO TO 4000
 4002 IF(CVALUE(IT) .EQ. 1.0) JPV = JPI
      IF(CVALUE(IT) .NE. 1.0) JPV = JPR
      IF(NSDAFD(IT) .LE. 1) JTFMT(1) = FA(1)
      IF(NSDAFD(IT) .GT. 1) JTFMT(1) = FA(16)
      JTFMT(2) = FI(JPV)
      JTFMT(3) = FA(6)
      IF(JPV .EQ. 10) JTFMT(3) = FA(7)
      IF(JPV .EQ. 11) JTFMT(3) = FA(8)
   32 WRITE(6,JTFMT) (JT(JJ), JJ=J,JE)
 4000 IH = 1
      IHB = 1
      GO TO 84
   83 IF(IR .NE. 1) GO TO 4003
      WRITE(6,6003) (JT(JJ),JJ=J,JE)
      GO TO 4001
 4003 JTFMT2(1) = FA(2)
      JTFMT2(2) = FA(3)
      IF(NSDAFD(IT) .GT. 1) GO TO 3000
      JTFMT2(3) = FA(4)
      GO TO 33
 3000 JTFMT2(3) = FA(5)
   33 JTFMT2(4) = FI(JPV)
      JTFMT2(5) = FA(6)
      IF(JPV .EQ. 10) JTFMT2(5) = FA(7)
      IF(JPV .EQ. 11) JTFMT2(5) = FA(8)
      WRITE(6,JTFMT2) (JT(JJ), JJ=J,JE)
 4001 IHB = 1
   84 IF(IR .EQ. 1) GO TO 5
      GO TO 6
    5 WRITE(6,6004) I,(KIRCDE(I,JJ), JJ=J,JE)
      GO TO 104
    6 IF(CVALUE(IT) .NE. 1.0) GO TO 85
      JTFMT(1) = FA(9)
      WRITE(6,JTFMT) I,(ITABLE(I,JJ), JJ=J,JE)
      GO TO 104
   85 JTFMT1(1) = FA(9)
      JTFMT1(2) = FR(JPV)
      JTFMT1(3) = FA(10)
      IF(NSDAFD(IT) .GT. 1) JTFMT1(3) = FA(11)
      IF(NSDAFD(IT) .GT. 1 .AND. JPV .EQ. 10) JTFMT1(3) = FA(13)
      IF(NSDAFD(IT) .GT. 1 .AND. JPV .EQ. 11) JTFMT1(3) = FA(15)
      IF(NSDAFD(IT) .EQ. 1 .AND. JPV .EQ. 10) JTFMT1(3) = FA(12)
      IF(NSDAFD(IT) .EQ. 1 .AND. JPV .EQ. 11) JTFMT1(3) = FA(14)
      WRITE(6,JTFMT1) I,(RTABLE(I,JJ), JJ=J,JE)
  104 CONTINUE
  103 CONTINUE
 6002 FORMAT(5X,36I3)
 6003 FORMAT(/2X,'+',2X,36I3)
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 6004 FORMAT(3X,I2,36I3)
      RETURN
      END

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CC    SUBROUTINE OCNVRT PRINTS THE SECTION OF THE GAMS                 CC
CC    OPTIMIZATION MODEL THAT CONVERTS THE DATA INTO THE               CC
CC    APPROPRIATE UNITS AND DELETES DATA OUTSIDE THE                   CC
CC    STUDY AREA.                                                      CC
CC                                                                     CC
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CC                                                                     CC
      SUBROUTINE OCNVRT
      COMMON /CARD C/ VANAME(22), INVARI(22), NUFILE(22),
     1                INFLAG(22), CVALUE(22), CONVER(22),
     2                NLINHR(22), FRMTIN(22,5), NSDBED(22),
     3                NSDAFD(22), DAYEAR(22), VUNITS(22,4)
      REAL*4 TOTA, DAYEAR, YEAR
      DATA TOTA/'WADT'/
      DO 201 M=1,20
      IF(VANAME(M) .NE. TOTA) GO TO 201
      YEAR = DAYEAR(M)
  201 CONTINUE
      WRITE(6,4999) YEAR, YEAR, YEAR
      WRITE(6,5000) YEAR
      WRITE(6,5001)
      IF(INVARI(5) .EQ. 0) WRITE(6,5002)
      WRITE(6,5003)
      IF(INVARI(8) .EQ. 2) GO TO 34
      WRITE(6,5033)
   34 WRITE(6,5034)
      WRITE(6,5004)
      WRITE(6,5005)
      WRITE(6,5006)
 4999 FORMAT(/' PARAMETER',
     1T12, 'GWAD(I,J)    ', A4, ' GROUNDWATER DEMAND',
     2' (ACRE-FT PER YEAR),'/
     3T12, 'MAI(I,J)     ', A4, ' MUNICIPAL AND INDUSTRIAL ',
     4'GROUNDWATER DEMAND', ' (ACRE-FT PER YEAR),'/
     5T12, 'TOTGWMI      AREA TOTAL GROUNDWATER ',
     6'DEMAND OF NON-ARKANSAS CELLS (ACRE-FT PER YEAR),'/
     7T12, 'TOTWADA      ', A4,
     8' AREA TOTAL AGRICULTURAL DEMAND (ACRE-FT PER YEAR),')
 5000 FORMAT(T12, 'TOTWADD      AREA TOTAL DEEP AQUIFER DEMAND ',
     1'(ACRE-FT PER YEAR),'/ T12, 'TOTWADS      ',
     2'AREA TOTAL SURFACE WATER DEMAND (ACRE-FT PER YEAR),'/
     3T12, 'TOTWADT      ', A4,
     4' AREA TOTAL WATER DEMAND (ACRE-FT PER YEAR);')
 5001 FORMAT(/T12, 'ATOP(I,J) = (ATOP(I,J) * CFATOP)$BOUN(I,J);'/
     1T12, 'BOTT(I,J) = (BOTT(I,J) * CFBOTT)$BOUN(I,J);'/
     2T12, 'CELO(I,J) = (CELO(I,J) * CFCELO)$BOUN(I,J);')
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5002 FORMAT(T12, 'CEUP(I,J) = (CEUP(I,J) * CFCEUP)$BOUN(I,J);')
5003 FORMAT(T12, 'CINF(I,J) = (CINF(I,J) * CFCINF)$BOUN(I,J);'/
    1T12, 'ELEV(I,J) = (ELEV(I,J) * CFELEV)$BOUN(I,J);')
5033 FORMAT(T12, 'GPLO(I,J) = (GPLO(I,J) * CFGPLO)$BOUN(I,J);')
5034 FORMAT(T12, 'GWMI(I,J) = (GWMI(I,J) * CFGWMI)$BOUN(I,J);'/
    1T12, 'HYCN(I,J) = (HYCN(I,J) * CFHYCN)$BOUN(I,J);'/
    2T12, 'OINF(I,J) = (OINF(I,J) * CFOINF)$BOUN(I,J);')
5004 FORMAT(T12, 'RIVC(I,J) = (RIVC(I,J) * CFRIVC)$BOUN(I,J);'/
    1T12, 'RCHL(I,J) = (RCHL(I,J) * CFRCHL)$BOUN(I,J);'/
    2T12, 'RIVS(I,J) = (RIVS(I,J) * CFRIVS)$BOUN(I,J);'/
    3T12, 'TOPO(I,J) = (TOPO(I,J) * CFTOPO)$BOUN(I,J);'/
    4T12, 'WADA(I,J) = (WADA(I,J) * CFWADA)$BOUN(I,J);'/
    5T12, 'WADD(I,J) = (WADD(I,J) * CFWADD)$BOUN(I,J);'/
    6T12, 'WADS(I,J) = (WADS(I,J) * CFWADS)$BOUN(I,J);'/
    7T12, 'WADT(I,J) = (WADT(I,J) * CFWADT)$BOUN(I,J);')
5005 FORMAT(/T12, 'GWAD(I,J)', T41, '= (WADT(I,J) + ',
    1'GWMI(I,J) - WADD(I,J) - WADS(I,J))$BOUN(I,J);'/
    2T12, 'GWAD(I,J)$(BOUN(I,J) LT 0.0'/T16, 'OR GWAD(I,J) LT 0.0)',
    3T41, '= 0.0;'/T12, 'MAI(I,J)', T41, '= (WADT(I,J) - WADA(I,J))',
    4'$BOUN(I,J);'/T12, 'MAI(I,J)$(MAI(I,J) LT 0.0)', T41, '= 0.0;')
5006 FORMAT(T12, 'TOTGWMI', T41,
    1'= SUM((I,J), GWMI(I,J)$(BOUN(I,J) AND GWMI(I,J))) + EPS;'/
    2T12, 'TOTWADA', T41, '= SUM((I,J), WADA(I,J)$BOUN(I,J)) + EPS;'/
    3T12, 'TOTWADD', T41, '= SUM((I,J), WADD(I,J)$BOUN(I,J)) + EPS;'/
    4T12, 'TOTWADS', T41, '= SUM((I,J), WADS(I,J)$BOUN(I,J)) + EPS;'/
    5T12, 'TOTWADT', T41, '= SUM((I,J), WADT(I,J)$BOUN(I,J)) + EPS;')
     RETURN
     END

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CC                                                                    CC
CC     SUBROUTINE PTRANS PRINTS THE SECTION OF THE GAMS               CC
CC     OPTIMIZATION MODEL THAT DEFINES THE INITIAL SATURATED          CC
CC     THICKNESS AND MIDPOINT TRANSMISSIVITIES FOR EITHER             CC
CC     CONFINED OR UNCONFINED AQUIFER SITUATIONS.                     CC
CC                                                                    CC
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CC                                                                    CC
     SUBROUTINE PTRANS
     WRITE(6,5000)
     WRITE(6,5001)
5000 FORMAT(/' PARAMETER', T12,
    1'B(I,J)   INITIAL SATURATED THICKNESS (FT),'/
    2T12, 'DTI(I,J),'/T12, 'DTJ(I,J),'/T12, 'TT(I,J);'//
    3T12, 'B(I,J)$(ATOP(I,J) GT ELEV(I,J))', T44,
    4'= ELEV(I,J) - BOTT(I,J);'/
    5T12, 'B(I,J)$(ATOP(I,J) LE ELEV(I,J))', T44,
    6'= ATOP(I,J) - BOTT(I,J);')
5001 FORMAT(T12, 'DTJ(I,J)$BOUN(I,J)', T44, '= HYCN(I,J) * SCFACV *'/
    1T46, '2.0 * (B(I,J) * B(I,J+1)) / (B(I,J) + B(I,J+1));'/
    2T12, 'DTI(I,J)$BOUN(I,J)', T44,
    3'= HYCN(I,J) * SCFACV *'/
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     4T46, '2.0 * (B(I,J) * B(I+1,J)) / (B(I,J) + B(I+1,J));'/
     5T12, 'TT(I,J)$BOUN(I,J)', T44,
     6'= DTI(I,J) + DTI(I-1,J) + DTJ(I,J) + DTJ(I,J-1);')
      RETURN
      END

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CC    SUBROUTINE QVUPLO PRINTS THE SECTION OF THE GAMS                CC
CC    OPTIMIZATION MODEL THAT ESTABLISHES THE LOWER AND UPPER         CC
CC    BOUNDS OF THE PUMPING, SURFACE WATER, EFFLUENT, HEAD AND        CC
CC    RECHARGE.                                                       CC
CC                                                                    CC
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CC                                                                    CC
      SUBROUTINE QVUPLO
      COMMON /CARD C/ VANAME(22), INVARI(22), NUFILE(22),
     1                INFLAG(22), CVALUE(22), CONVER(22),
     2                NLINHR(22), FRMTIN(22,5), NSDBED(22),
     3                NSDAFD(22), DAYEAR(22), VUNITS(22,4)
      WRITE(6,5000)
      WRITE(6,5001)
      IF(INVARI(5) .NE. 0) GO TO 9
      WRITE(6,5010)
      GO TO 11
    9 WRITE(6,5009) INVARI(5)
   11 WRITE(6,5002)
      IF(INVARI(14) .LE. 0.0) GO TO 2
    1 WRITE(6,5003)
      GO TO 3
    2 WRITE(6,5004)
    3 WRITE(6,5005)
      IF(INVARI(8) .NE. 2) GO TO 5
    4 WRITE(6,5006)
      GO TO 6
    5 WRITE(6,5007)
    6 WRITE(6,5008)
 5000 FORMAT(/' PARAMETER', T12, 'CEMAX(I,J)', T25, 'MAXIMUM EFFLUENT,'/
     1T12, 'CEMIN(I,J)', T25, 'MINIMUM EFFLUENT,'/
     2T12, 'SSWMAX(I,J)', T25, 'MAXIMUM DIVERSION,'/
     3T12, 'SSWMIN(I,J)', T25, 'MINIMUM DIVERSION,'/T12, 'HMAX(I,J)',
     4T25, 'MAXIMUM HEAD,',/T12, 'HMIN(I,J)', T25, 'MINIMUM HEAD,'/
     5T12, 'RCHMAX(I,J)', T25, 'MAXIMUM RECHARGE,'/
     6T12, 'RCHMIN(I,J)', T25, 'MINIMUM RECHARGE,'/
     7T12, 'GUSMIN(I,J)', T25, 'RECHARGE PROVIDED BY USGS,'/
     8T12, 'GPMAX(I,J)', T25, 'MAXIMUM PUMPING,'/
     9T12, 'GPMIN(I,J)', T25, 'MINIMUM PUMPING;')
 5001 FORMAT(/T12, 'CINF(I,J)', T41, '= CINF(I,J) * SCFACV;'/
     1T12, 'OINF(I,J)', T41, '= OINF(I,J) * SCFACV;'/
     2T12, 'CELO(I,J)', T41, '= CELO(I,J) * SCFACV;'/
     3T12, 'SSWMIN(I,J)$BOUN(I,J)', T41, '= WADS(I,J) * SCFACV;'/
     4T12, 'SSWMAX(I,J)$(BOUN(I,J) NE 0'/T16, 'AND IRIV(I,J) EQ 0)',
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     5T41, '= WADS(I,J) * SCFACV;'/T12, 'SSWMAX(I,J)$(BOUN(I,J) NE 0'/
     6T16, 'AND IRIV(I,J) NE 0)', T41, '= (WADS(I,J) + GWAD(I,J)) *',
     7' SCFACV;'/T12, 'CEMIN(I,J)$(BOUN(I,J) AND'/
     8T16, 'IRIV(I,J) AND CELO(I,J))', T41, '= CELO(I,J);')
 5009 FORMAT(T12, 'CEMAX(I,J)$(BOUN(I,J) AND'/
     1T16, 'IRIV(I,J) AND CELO(I,J))', T41, '= CEMIN(I,J) * ', I3, ';')
 5010 FORMAT(T12, 'CEMAX(I,J)$(BOUN(I,J) AND'/
     1T16, 'IRIV(I,J) AND CELO(I,J))', T41, '= CEUP(I,J) * SCFACV;')
 5002 FORMAT(T12, 'HMAX(I,J)$(BOUN(I,J) GT 0)', T41,
     1'= SCFACL * TOPO(I,J);'/T12, 'HMIN(I,J)$(BOUN(I,J) GT 0)', T41,
     2'= SCFACL * (BOTT(I,J) + 20.0);'/
     3T12, 'HMAX(I,J)$(BOUN(I,J) LT 0)', T41,
     4'= SCFACL * (ELEV(I,J) + ALLOWL);'/
     5T12, 'HMIN(I,J)$(BOUN(I,J) LT 0)', T41,
     6'= SCFACL * (ELEV(I,J) - ALLOWL);')
 5003 FORMAT(T12, 'RCHMIN(I,J)', T41, '= - RCFAC * RCHL(I,J) * SCFACV;')
 5004 FORMAT(T12, 'RCHMIN(I,J)$(BOUN(I,J) LT 0)', T41, '= - 9999999.0;')
 5005 FORMAT(T12, 'GUSMIN(I,J)', T41, '= - RCHL(I,J);'/
     1T12, 'RCHMAX(I,J)$(BOUN(I,J) LT 0)', T41, '= 9999999.0;'/
     2T12, 'RCHMIN(I,J)$(BOUN(I,J) GT 0)', T41,
     3'= (0.0 - ALLOWV) * SCFACV ;'/
     4T12, 'RCHMAX(I,J)$(BOUN(I,J) GT 0)', T41,
     5'= (0.0 + ALLOWV) * SCFACV ;'/
     6T12, 'GPMIN(I,J)$(BOUN(I,J) LT 0)', T41,
     7'= (0.0 - ALLOWV) * SCFACV ;'/
     8T12, 'GPMAX(I,J)$(BOUN(I,J) LT 0)', T41,
     9'= (0.0 + ALLOWV) * SCFACV ;')
 5006 FORMAT(T12, 'GPMIN(I,J)$(BOUN(I,J) GT 0)', T41,
     1'= (MAI(I,J) - ALLOWV) * SCFACV;')
 5007 FORMAT(T12, 'GPMIN(I,J)$(BOUN(I,J) GT 0)', T41,
     1'= (GPLO(I,J) - ALLOWV) * SCFACV;')
 5008 FORMAT(T12, 'GPMAX(I,J)$(BOUN(I,J) GT 0)', T41,
     1'= SCFACV * (GWAD(I,J) + ALLOWV);')
      RETURN
      END

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CC                                                                      CC
CC     SUBROUTINE RMODEL PRINTS THE SECTION OF THE GAMS                 CC
CC     OPTIMIZATION MODEL THAT ESTABLISHES THE EQUATIONS FOR:           CC
CC     (1) BOUNDS OF THE PUMPING, SURFACE WATER, EFFLUENT, HEAD         CC
CC         AND RECHARGE,                                                CC
CC     (2) STEADY-STATE EQUATION FOR EACH CELL IN THE STUDY AREA,       CC
CC     (3) RIVER BALANCE FOR EACH RIVER REACH,                          CC
CC     AND                                                              CC
CC     (4) OBJECTIVE FUNCTION.                                          CC
CC     SUBROUTINE RMODEL ALSO PRINTS THE SECTION OF THE GAMS            CC
CC     OPTIMIZATION MODEL THAT SPECIFIES THE OPTIMIZATION CODE          CC
CC     TO BE USED.                                                      CC
CC                                                                      CC
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      SUBROUTINE RMODEL
      COMMON /CARD A/ NAMEMO(2), IOTYPE, ALLOWL, ALLOWV, SCFACL, SCFACV
      REAL*4 NAMEMO
      WRITE(6,5000)
      WRITE(6,5001)
      WRITE(6,5002)
      WRITE(6,5003)
      WRITE(6,5004)
      WRITE(6,5005)
      WRITE(6,5006)
      WRITE(6,5007)
      WRITE(6,5008) NAMEMO, NAMEMO
 5000 FORMAT(/' VARIABLES', T12,'CE(I,J)    EFFLUENT'/
     1T12, 'GP(I,J)    PUMPING'/T12, 'H(I,J)     HEAD'/
     2T12, 'RCH(I,J)   RECHARGE'/T12, 'SSW(I,J)  SURFACE WATER'/
     3T12, 'TPPS       TOTAL PUMPING PLUS SURFACE WATER')
 5001 FORMAT(/' FREE VARIABLE TPPS;'/
     1/' POSITIVE VARIABLE CE(I,J), GP(I,J), H(I,J), SSW(I,J);')
 5002 FORMAT(/' EQUATIONS',
     1T12, 'CL(I,J)', T23, 'LOWER LIMIT ON EFFLUENT'/
     2T12, 'CU(I,J)', T23, 'UPPER LIMIT ON EFFLUENT'/
     3T12, 'GL(I,J)', T23, 'LOWER LIMIT ON PUMPING'/
     4T12, 'GU(I,J)', T23, 'UPPER LIMIT ON PUMPING'/
     5T12, 'HL(I,J)', T23, 'LOWER LIMIT ON HEAD'/
     6T12, 'HU(I,J)', T23, 'UPPER LIMIT ON HEAD'/
     7T12, 'RL(I,J)', T23, 'LOWER LIMIT ON RECHARGE'/
     8T12, 'RU(I,J)', T23, 'UPPER LIMIT ON RECHARGE')
 5003 FORMAT(T12, 'SL(I,J)', T23, 'LOWER LIMIT ON SURFACE WATER',
     1' DIVERSION'/
     2T12, 'SU(I,J)', T23, 'UPPER LIMIT ON SURFACE WATER ',
     3'IN NONRIVER CELL'/
     4T12, 'SUR(I,J)', T23, 'UPPER LIMIT ON SURFACE PLUS ',
     5'GROUNDWATER IN RIVER CELL'/
     6T12, 'TSSE(I,J)', T23, 'STEADY STATE CONSTRAINT'/
     7T12, 'YRIVB(K)', T23, 'RIVER BALANCE FOR RIVER REACH K'/
     8T12, 'ZP', T23, 'OBJECTIVE FUNCTION (SUM OF',
     9' SURFACE WATER AND GROUNDWATER PUMPING);')
 5004 FORMAT(/T12, 'CL(I,J)$(BOUN(I,J)'/
     1T16, 'AND IRIV(I,J) AND CELO(I,J))..', T50, 'CE(I,J)', T58,
     2'=G= CEMIN(I,J);'/T12, 'CU(I,J)$(BOUN(I,J)'/
     3T16, 'AND IRIV(I,J) AND CELO(I,J))..', T50, 'CE(I,J)', T58,
     4'=L= CEMAX(I,J);'/T12, 'GL(I,J)$BOUN(I,J)..', T50, 'GP(I,J)',
     5T58, '=G= GPMIN(I,J);'/T12, 'GU(I,J)$BOUN(I,J)..', T50,
     6'GP(I,J)', T58, '=L= GPMAX(I,J);'/T12, 'HL(I,J)$BOUN(I,J)..',
     7T51, 'H(I,J)', T58, '=G= HMIN(I,J);'/T12, 'HU(I,J)$BOUN(I,J)..',
     8T51, 'H(I,J)', T58, '=L= HMAX(I,J);'/T12, 'RL(I,J)$BOUN(I,J)..',
     9T49, 'RCH(I,J)', T58, '=G= RCHMIN(I,J);')
 5005 FORMAT(T12, 'RU(I,J)$BOUN(I,J)..', T49, 'RCH(I,J)', T58,
     1'=L= RCHMAX(I,J);'/T12, 'SL(I,J)$BOUN(I,J)..',
     2T49, 'SSW(I,J)', T58, '=G= SSWMIN(I,J);'/T12,
     3'SU(I,J)$(BOUN(I,J)'/T16, 'NE 0 AND IRIV(I,J) EQ 0)..', T49,
     4'SSW(I,J)', T58, '=L= SSWMAX(I,J);'/T12,
     5'SUR(I,J)$(BOUN(I,J) NE 0'/T16, 'AND IRIV(I,J) NE 0)..',
     6'  GP(I,J) + SSW(I,J)', T58, '=L= SSWMAX(I,J);')
 5006 FORMAT(T12, 'TSSE(I,J)$BOUN(I,J)..'/ T16,
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     1'DTI(I,J) * H(I+1,J)$BOUN(I+1,J) +'/
     2T16, 'DTI(I-1,J) * H(I-1,J)$BOUN(I-1,J) +'/
     3T16, 'DTJ(I,J-1) * H(I,J-1)$BOUN(I,J-1) +'/
     4T16, 'DTJ(I,J) * H(I,J+1)$BOUN(I,J+1) -'/
     5T16, '(TT(I,J) + SCFACV * RIVC(I,J)) * H(I,J)', T58,
     6'=E= SCFACL * (GP(I,J) + RCH(I,J)) -'/
     7T62, 'SCFACL * RIVS(I,J) * SCFACV * RIVC(I,J);')
 5007 FORMAT(T12, 'YRIVB(K)..  SUM(KK, SUM((I,J),'/ T16,
     1'(SSW(I,J)$(IRKC(K,KK) EQ IRIV(I,J) AND'/ T16,
     2'IRKC(K,KK) GT 0) + (SCFACV / SCFACL) *'/ T16,
     3'RIVC(I,J) * (SCFACL * RIVS(I,J) - H(I,J))'/ T16,
     4'$(IRKC(K,KK) EQ IRIV(I,J) AND IRKC(K,KK)'/ T16,
     5'GT 0))) + SUM((I,J), CE(I,J)$(CELO(I,J)'/ T16,
     6'GT 0.0 AND (IRIV(I,J) EQ IRCODE(K))))', T58,
     7'=E= SUM(KL, SUM((IL,JL), (CINF(IL,JL) +'/
     8T62, 'OINF(IL,JL))$(IRIV(IL,JL) EQ IRKC(K,KL)'/
     9T62, 'AND IRKC(K,KL) GT 0)));')
 5008 FORMAT(/T12, 'ZP..', T53, 'TPPS', T58, '=',
     1'E= SUM((I,J), (GP(I,J) + SSW(I,J))$BOUN(I,J));'//
     2'**** ', 'INITIALIZE PUMPING TO ITS LOWER BOUND'/
     3T12, 'GP.L(I,J)$BOUN(I,J) = GPMIN(I,J);'//
     4' MODEL', T8, 2A4, ' /ALL/;'/
     5' SOLVE', T8, 2A4, ' MAXIMIZING TPPS USING NLP;')
      RETURN
      END

CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
CC    SUBROUTINE SPOSTP PRINTS THE SECTION OF THE GAMS                CC
CC    OPTIMIZATION MODEL THAT POSTPROCESSES THE RESULTS TO            CC
CC    OBTAIN THE NECESSARY PARAMETERS.                                CC
CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
      SUBROUTINE SPOSTP
      WRITE(6,5000)
      WRITE(6,5001)
      WRITE(6,5002)
      WRITE(6,5003)
      WRITE(6,5004)
      WRITE(6,5005)
      WRITE(6,5006)
      WRITE(6,5007)
      WRITE(6,5008)
      WRITE(6,5009)
      WRITE(6,5010)
      WRITE(6,5011)
      WRITE(6,5012)
      WRITE(6,5013)
      WRITE(6,5014)
      WRITE(6,6000)
      WRITE(6,6001)
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      WRITE(6,6002)
      WRITE(6,6003)
      WRITE(6,6004)
      WRITE(6,6005)
      WRITE(6,6006)
      WRITE(6,6007)
      WRITE(6,6008)
      WRITE(6,6009)
      WRITE(6,6010)
      WRITE(6,6011)
      WRITE(6,6012)
      WRITE(6,6013)
      WRITE(6,6014)
      WRITE(6,7000)
      WRITE(6,7001)
      WRITE(6,7002)
      WRITE(6,7003)
5000 FORMAT(/' PARAMETER',2X,
     1'BIND(I,J)', T28, 'INDICATOR MATRIX FOR GAMSOP,'/
     212X,'BBOUN(I,J)',T28,'INDICATOR MATRIX (SAME AS BOUNDARY ARRAY),'/
     312X,'BITOT', T28, 'TOTAL NUMBER OF CELLS IN THE STUDY AREA,'/
     412X,'BITOTC', T28, 'TOTAL NUMBER OF CONSTANT HEAD CELLS ',
     5'IN THE STUDY AREA,'/
     612X,'BITOTNR', T28, 'TOTAL NUMBER OF NONRIVER CELLS ',
     7'IN THE STUDY AREA,'/
     812X,'BITOTR', T28, 'TOTAL NUMBER OF RIVER CELLS IN ',
     9'THE STUDY AREA,')
5001 FORMAT(12X,'BITOTV', T28, 'TOTAL NUMBER OF VARIABLE',
     1' HEAD CELLS IN THE STUDY AREA,'/
     212X,'CCE(I,J)', T28, 'EFFLUENT (ACRE-FT PER YEAR),'/
     312X,'CCET', T28, 'TOTAL EFFLUENT (THOUSANDS ',
     4'OF ACRE-FT PER YEAR),'/
     512X,'CCETA', T28,  'AVERAGE EFFLUENT (ACRE-',
     6'FT PER YEAR PER EFFLUENT CELL),'/
     712X,'GGP(I,J)', T28, 'OPTIMAL PUMPING (ACRE-FT PER YEAR),'/
     812X,'GGPF(I,J)', T28, 'NEAREST LOWER INTEGER VALUE ',
     9'OF OPTIMAL PUMPING (ACRE-FT PER YEAR),')
5002 FORMAT(12X,'HH(I,J)', T28, 'OPTIMAL HEAD (FT),'/
     112X,'HHA', T28, 'AVERAGE OPTIMAL HEAD (FT),'/
     212X,'HHL', T28, 'LARGEST VALUE OF OPTIMAL HEAD (FT),'/
     312X,'HHS', T28, 'SMALLEST VALUE OF OPTIMAL HEAD (FT),'/
     412X,'MAIT', T28, 'TOTAL MUNICIPAL AND INDUSTRIAL ',
     5'DEMAND (ACRE-FT PER YEAR),'/
     612X,'MAIU(I,J)', T28, 'VOLUME OF UNMET MUNICIPAL AND ',
     7'INDUSTRIAL DEMAND (ACRE-FT PER YEAR),'/
     812X,'MAIUT', T28, 'TOTAL VOLUME OF UNMET MUNICIPAL AND ',
     9'INDUSTRIAL DEMAND (ACRE-FT PER YEAR),')
5003 FORMAT(12X,'RRCH(I,J)', T28, 'OPTIMAL RECHARGE (ACRE-FT ',
     1'PER YEAR),'/12X,'RRCHGUS(I,J)', T28, 'RATIO OF OPTIMAL ',
     2'RECHARGE OVER USGS-SUPPLIED MINIMUM RECHARGE,'/
     312X,'RRCHGUSX', T28, 'MAXIMUM RATIO OF RECHARGE ',
     4'OVER USGS-SUPPLIED MINIMUM RECHARGE,'/
     512X,'RRCHT', T28, 'TOTAL RECHARGE (ACRE-FT PER YEAR),'/
     612X,'RRCHTA', T28, 'AVERAGE RECHARGE (ACRE-',
     7'FT PER YEAR PER RECHARGE CELL),'/
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    812X,'SSSW(I,J)', T28, 'SURFACE WATER (ACRE-FT PER YEAR),')
5004 FORMAT(12X,'TAPP', T28, 'TOTAL PUMPING PLUS SURFACE WATER',
    1' (ACRE-FT PER YEAR),'/
    212X,'TOTGW', T28, 'TOTAL GROUNDWATER PUMPING',
    3' (ACRE-FT PER YEAR),'/
    412X,'TOTSW', T28, 'TOTAL SURFACE WATER (ACRE-FT PER YEAR),'/
    512X,'TOTGWAD', T28, 'TOTAL GROUNDWATER DEMAND',
    6' (ACRE-FT PER YEAR),'/
    712X,'TOTSWAD', T28, 'TOTAL SURFACE WATER DEMAND ',
    8'(ACRE-FT PER YEAR),')
5005 FORMAT(12X,'TOTWAD', T28, 'TOTAL WATER DEMAND ',
    1'(ACRE-FT PER YEAR),'/
    212X,'XRTAPP', T28, 'RATIO OF TOTAL PUMPING ',
    3'PLUS SURFACE WATER OVER TOTAL WATER DEMAND,'/
    412X,'XRGP', T28, 'RATIO OF TOTAL PUMPING ',
    5'OVER TOTAL GROUNDWATER DEMAND,'/
    612X,'XRSSW', T28, 'RATIO OF SURFACE WATER ',
    7'OVER TOTAL SURFACE WATER DEMAND,'/
    812X,'ZDELEVH(I,J)', T28, 'INITIAL HEAD MINUS OPTIMAL HEAD (FT),')
5006 FORMAT(12X,'ZDELEVHA', T28, 'AVERAGE OF INITIAL HEAD ',
    1'MINUS OPTIMAL HEAD (FT),'/
    212X,'ZDELEVHX', T28, 'MINIMUM OF INITIAL HEAD ',
    3'MINUS OPTIMAL HEAD (FT),'/
    412X,'ZDELEVHY', T28, 'MAXIMUM OF INITIAL HEAD ',
    5'MINUS OPTIMAL HEAD (FT),'/
    612X,'ZDRSH(I,J)', T28, 'RIVER STAGE MINUS OPTIMAL HEAD (FT),'/
    712X,'ZDRSHA', T28, 'AVERAGE OF RIVER STAGE ',
    8'MINUS OPTIMAL HEAD (FT),')
5007 FORMAT(12X,'ZDTOPOH(I,J)', T28, 'TOPOGRAPHICAL TOP MINUS ',
    1'OPTIMAL HEAD (FT),'/
    212X,'ZDTOPOHA', T28, 'AVERAGE TOPOGRAPHICAL TOP ',
    3'MINUS OPTIMAL HEAD (FT),'/
    412X,'ZEXCESSW(I,J)', T28, 'SURFACE WATER IN EXCESS ',
    5'OF SURFACE WATER DEMAND (ACRE-FT PER YEAR),'/
    612X,'ZEXCESWT', T28, 'TOTAL SURFACE WATER IN ',
    7'EXCESS OF SURFACE WATER DEMAND (ACRE-FT PER YEAR),'/
    812X,'ZFSTHIC(I,J)', T28, 'FINAL SATURATED THICKNESS (FT),'/
    912X,'ZFSTHICA', T28, 'AVERAGE OF FINAL SATURATED THICKNESS (FT),')
5008 FORMAT(12X,'ZFSTHICX', T28, 'MINIMUM FINAL SATURATED ',
    1'THICKNESS (FT),'/
    212X,'ZFSTHICY', T28, 'MAXIMUM FINAL SATURATED THICKNESS (FT),'/
    312X,'ZISTHICA', T28, 'AVERAGE OF INITIAL SATURATED ',
    4'THICKNESS (FT),'/
    512X,'ZISTHICX', T28, 'MINIMUM INITIAL SATURATED THICKNESS (FT),'/
    612X,'ZISTHICY', T28, 'MAXIMUM INITIAL SATURATED THICKNESS (FT),'/
    712X,'ZGUSMINT', T28, 'TOTAL OF USGS-SUPPLIED ',
    8'RECHARGE (ACRE-FT PER YEAR),')
5009 FORMAT(12X,'ZTGGP(I,J)', T28, 'TIGHT PUMPING (-) AT LOWER ',
    1'BOUND AND (+) AT UPPER BOUND (ACRE-FT PER YEAR),'/
    212X,'ZTHH(I,J)', T28, 'TIGHT HEAD (-) AT LOWER ',
    3'BOUND AND (+) AT UPPER BOUND (FT),'/
    412X,'ZTRRCH(I,J)', T28, 'TIGHT RECHARGE (-) AT LOWER ',
    5'BOUND AND (+) AT UPPER BOUND (ACRE-FT PER YEAR),'/
    612X,'ZTRXPGP(I,J)', T28, 'PERCENTAGE REDUCTION IN PUMPING,'/
    712X,'ZTRXPGPA', T28, 'AVERAGE PERCENTAGE REDUCTION IN PUMPING,'/
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     812X,'ZTRXPT(I,J)', T28, 'PERCENTAGE REDUCTION IN ',
     9'TOTAL WATER USE,')
5010 FORMAT(12X,'ZTRXPTA', T28, 'AVERAGE PERCENTAGE REDUCTION ',
     1'IN TOTAL WATER USE,'/
     212X,'ZUGPD(I,J)', T28, 'UNSATISFIED GROUNDWATER ',
     3'DEMAND (ACRE-FT PER YEAR),'/
     412X,'ZUGPDT', T28, 'TOTAL UNSATISFIED GROUNDWATER ',
     5'DEMAND (ACRE-FT PER YEAR),'/
     612X,'ZUGPDTA', T28, 'AVERAGE UNSATISFIED GROUNDWATER ',
     7'DEMAND (ACRE-FT PER YEAR),'/
     812X,'ZUT(I,J)', T28, 'VOLUME OF UNMET DEMAND ',
     9'TO COME FROM OTHER SOURCES (ACRE-FT PER YEAR),')
5011 FORMAT(12X,'ZUTT', T28, 'TOTAL VOLUME OF UNMET DEMAND ',
     1'TO COME FROM OTHER SOURCES (ACRE-FT PER YEAR),'/
     212X,'ZYCIIR(K)', T28, 'INFLUENT FOR CELLS WITH ',
     3'IR CODE EQUAL TO K (ACRE-FT PER YEAR),'/
     412X,'ZYCIIRT', T28, 'TOTAL INFLUENT FOR ALL ',
     5'RIVER CELLS (ACRE-FT PER YEAR),'/
     612X,'ZYGPAG(I,J)', T28, 'OPTIMAL GROUNDWATER PUMPING ',
     7'LESS M&I DEMAND (ACRE-FT PER YEAR),'/
     812X,'ZYOIIR(K)', T28, 'OVERLAND INFLOW FOR CELLS ',
     9'WITH IR CODE EQUAL TO K (ACRE-FT PER YEAR),')
5012 FORMAT(12X,'ZYOIIRT', T28, 'TOTAL OVERLAND INFLOW FOR ',
     1'ALL RIVER CELLS (ACRE-FT PER YEAR),'/
     212X,'ZYSAI(I,J)', T28, 'STREAM-AQUIFER INTERFLOW ',
     3'(ACRE-FT PER YEAR),'/
     412X,'ZYSAIT', T28, 'TOTAL STREAM-AQUIFER INTERFLOW ',
     5'(ACRE-FT PER YEAR),'/
     612X,'ZYSAIIR(K)', T28, 'STREAM-AQUIFER INTERFLOW FOR CELLS ',
     7'WITH IR CODE EQUAL TO K (ACRE-FT PER YEAR),'/
     812X,'ZYSAIIRT', T28, 'TOTAL STREAM-AQUIFER ',
     9'INTERFLOW FOR ALL RIVER CELLS (ACRE-FT PER YEAR),')
5013 FORMAT(12X,'ZYSSWIR(K)', T28, 'SURFACE WATER FOR CELLS ',
     1'WITH IR CODE EQUAL TO K (ACRE-FT PER YEAR),'/
     212X,'ZYSSWIRT', T28, 'TOTAL SURFACE WATER FOR ',
     3'ALL RIVER CELLS (ACRE-FT PER YEAR),'/
     412X,'ZZCIIR(K)', T28, 'INFLUENT FOR CELLS IN ',
     5'RIVER REACH K (ACRE-FT PER YEAR),'/
     612X,'ZZOIIR(K)', T28, 'OVERLAND INFLOW FOR CELLS ',
     7'IN RIVER REACH K (ACRE-FT PER YEAR),'/
     812X,'ZZSAIIR(K)', T28, 'STREAM-AQUIFER INTERFLOW ',
     9'FOR CELLS IN RIVER REACH K (ACRE-FT PER YEAR),')
5014 FORMAT(12X,'ZZSSWIR(K)', T28, 'SURFACE WATER FOR CELLS ',
     1'IN RIVER REACH K (ACRE-FT PER YEAR);')
6000 FORMAT(/12X,'BIND(I,J)$(BOUN(I,J)'/
     112X,'    NE 0)', T37, '= 1;'/
     212X,'BITOT', T37, '= SUM((I,J), BIND(I,J));'/
     312X,'BITOTC', T37, '= SUM((I,J), BIND(I,J)$(BOUN(I,J) LT 0));'/
     412X,'BITOTNR', T37, '= SUM((I,J), BIND(I,J)',
     5'$(BOUN(I,J) NE 0 AND IRIV(I,J) EQ 0));'/
     612X,'BITOTR', T37, '= SUM((I,J), BIND(I,J)',
     7'$(BOUN(I,J) NE 0 AND IRIV(I,J) NE 0));'/
     812X,'BITOTV', T37, '= SUM((I,J), BIND(I,J)$(BOUN(I,J) GT 0));')
6001 FORMAT(12X,'CCE(I,J)$BOUN(I,J)', T37, '= CE.L(I,J) *',
     1' (1.0 / SCFACV) + EPS;'/
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     212X,'CCET', T37, '= SUM((I,J), CCE(I,J)) / 1000.0;'/
     312X,'CCETA',T37, '= CCET / SUM((I,J), BIND(I,J)$CELO(I,J));'/
     412X,'GGP(I,J)$BOUN(I,J)', T37, '= GP.L(I,J) *',
     5' (1.0 / SCFACV) + EPS;'/
     612X,'GGPF(I,J)$BOUN(I,J)', T37, '= FLOOR(GP.L(I,J)',
     7' * (1.0 / SCFACV)) + EPS;'/
     812X,'HH(I,J)$BOUN(I,J)', T37, '= H.L(I,J) * ',
     9'(1.0 / SCFACL) + EPS;')
 6002 FORMAT(
     112X,'HHL', T37, '= SMAX((I,J)$BIND(I,J), HH(I,J));'/
     212X,'HHS', T37, '= SMIN((I,J)$BIND(I,J), HH(I,J));'/
     312X,'HHA', T37, '= SUM((I,J), HH(I,J)$BOUN(I,J)) / BITOT;'/
     412X,'MAIT', T37, '= SUM((I,J), MAI(I,J)$BOUN(I,J));'/
     512X,'MAIU(I,J)$BOUN(I,J)', T37, '= (MAI(I,J) - ',
     6'GGP(I,J))$(MAI(I,J) GT GGP(I,J)) + EPS;'/
     712X,'MAIUT', T37, '= SUM((I,J), MAIU(I,J)$BOUN(I,J));'/
     812X,'RRCH(I,J)$BOUN(I,J)', T37, '= RCH.L(I,J) * ',
     9'(1.0 / SCFACV) + EPS;')
 6003 FORMAT(12X,'RRCHGUS(I,J)$(BOUN(I,J)'/
     112X,'     LT 0)', T37, '= RRCH(I,J) / GUSMIN(I,J);'/
     212X,'RRCHGUSX', T37, '= SMAX((I,J), ',
     3'RRCHGUS(I,J)$(BOUN(I,J) LT 0.0));'/
     412X,'RRCHT', T37, '= SUM((I,J), RRCH(I,J)$BOUN(I,J));'/
     512X,'RRCHTA', T37, '= RRCHT / BITOTC;'/
     612X,'SSSW(I,J)$BOUN(I,J)', T37, '= SSW.L(I,J) * ',
     7'(1.0 / SCFACV) + EPS;'/
     812X,'TAPP', T37, '= TPPS.L * (1.0 / SCFACV);'/
     912X,'TOTGW', T37, '= SUM((I,J), GGP(I,J)$BOUN(I,J));')
 6004 FORMAT(12X,'TOTSW', T37, '= SUM((I,J), SSSW(I,J)$BOUN(I,J));'/
     112X,'TOTGWAD', T37, '= SUM((I,J), GWAD(I,J)$BOUN(I,J));'/
     212X,'TOTSWAD', T37, '= SUM((I,J), WADS(I,J)$BOUN(I,J));'/
     312X,'TOTWAD', T37, '= SUM((I,J), (',
     4'GWAD(I,J) + WADS(I,J))$BOUN(I,J));'/
     512X,'XRTAPP', T37, '= TAPP / TOTWAD;'/
     612X,'XRGP', T37, '= TOTGW / TOTGWAD;'/
     712X,'XRSSW', T37, '= TOTSW / TOTSWAD;'/
     812X,'ZDELEVH(I,J)$BOUN(I,J)', T37, '= ELEV(I,J) - ',
     9'H.L(I,J) * (1.0 / SCFACL) + EPS;')
 6005 FORMAT(12X,'ZDELEVHA', T37, '= SUM((I,J), ',
     1'ZDELEVH(I,J)$BOUN(I,J)) / BITOT;'/
     212X,'ZDELEVHX', T37, '= SMIN((I,J)$BIND(I,J), ZDELEVH(I,J));'/
     312X,'ZDELEVHY', T37, '= SMAX((I,J)$BIND(I,J), ZDELEVH(I,J));'/
     412X,'ZDRSH(I,J)$BOUN(I,J)', T37, '= RIVS(I,J) -',
     5'H.L(I,J) * (1.0 / SCFACL) + EPS;'/
     612X,'ZDRSHA', T37, '= SUM((I,J), ZDRSH(I,J)$BOUN(I,J)) / BITOT;'/
     712X,'ZDTOPOH(I,J)$BOUN(I,J)', T37, '= TOPO(I,J) - ',
     8'H.L(I,J) * (1.0 / SCFACL) + EPS;')
 6006 FORMAT(12X,'ZDTOPOHA', T37, '= SUM((I,J), ',
     1'ZDTOPOH(I,J)$BOUN(I,J)) / BITOT;'/
     212X,'ZEXCESSW(I,J)$BOUN(I,J)', T37, '= (SSW.L(I,J) ',
     3'* (1.0 / SCFACV) - WADS(I,J)) + EPS;'/
     412X,'ZEXCESWT', T37, '= SUM((I,J), ZEXCESSW(I,J)$BOUN(I,J));'/
     512X,'ZFSTHIC(I,J)$BOUN(I,J)', T37, '= H.L(I,J) * ',
     6'(1.0 / SCFACL) - BOTT(I,J) + EPS;'/
     712X,'ZFSTHICA', T37, '= SUM((I,J), ',
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     8'ZFSTHIC(I,J)$BOUN(I,J)) / BITOT;'/
     912X,'ZFSTHICX', T37, '= SMIN((I,J)$BIND(I,J), ZFSTHIC(I,J));')
6007 FORMAT(12X,'ZFSTHICY', T37, '= SMAX((I,J)$B',
     1'IND(I,J), ZFSTHIC(I,J));'/
     212X,'ZISTHICA', T37, '= SUM((I,J), B(I,J)$BOUN(I,J)) / BITOT;'/
     312X,'ZISTHICX', T37, '= SMIN((I,J)$BIND(I,J), B(I,J));'/
     4 12X,'ZISTHICY', T37, '= SMAX((I,J)$BIND(I,J), B(I,J));'/
     512X,'ZGUSMINT', T37, '= SUM((I,J), GUSMIN(I,J)$BOUN(I,J));'/
     612X,'ZTGGP(I,J)$BOUN(I,J)', T37, '= - GGP(I,J)$(',
     7'GP.L(I,J) EQ GPMIN(I,J));'/
     812X,'ZTGGP(I,J)$BOUN(I,J)', T37, '= GGP(I,J)$(GP',
     9'.L(I,J) EQ GPMAX(I,J));')
6008 FORMAT(12X,'ZTHH(I,J)$BOUN(I,J)', T37, '= - HH(I,J)$(H',
     1'.L(I,J) EQ HMIN(I,J));'/
     212X,'ZTHH(I,J)$BOUN(I,J)', T37, '= HH(I,J)$(H.L',
     3'(I,J) EQ HMAX(I,J));'/
     412X,'ZTRRCH(I,J)$BOUN(I,J)', T37, '= - RRCH(I,J)$',
     5'(RCH.L(I,J) EQ RCHMIN(I,J));'/
     612X,'ZTRRCH(I,J)$BOUN(I,J)', T37, '= RRCH(I,J)$(R',
     7'CH.L(I,J) EQ RCHMAX(I,J));'/
     812X,'ZTRXPGP(I,J)$BOUN(I,J)', T37, '= 0.0;')
6009 FORMAT(12X,'ZTRXPGP(I,J)$(BOUN(I,J)'/
     112X,'    AND GWAD(I,J))', T37, '= ((GWAD(I,J) ',
     2'- GGP(I,J)) / GWAD(I,J)) * 100.0;'/
     312X,'ZTRXPGP(I,J)$BOUN(I,J)', T37, '= ZTRXPGP(I,J) + EPS;'/
     412X,'ZTRXPGPA', T37, '= SUM((I,J), ZTRXPGP(I,J)) / SUM((I,J),'/
     5T39,'BIND(I,J)$(GWAD(I,J) GT 0 AND BOUN(I,J) NE 0)) ;'/
     612X,'ZTRXPT(I,J)$BOUN(I,J)', T37, '= 0.0;')
6010 FORMAT(12X,'ZTRXPT(I,J)$(BOUN(I,J)'/12X,'    AND (WADS(I,J)'/
     112X,'    OR GWAD(I,J)))', T37, '= (((WADS(I,J) ',
     2'+ GWAD(I,J)) - (SSSW(I,J) + GGP(I,J))) /'/
     3T39, '(WADS(I,J) + GWAD(I,J))) * 100.0;'/
     412X,'ZTRXPT(I,J)$BOUN(I,J)', T37, '= ZTRXPT(I,J) + EPS;'/
     512X,'ZTRXPTA', T37, '= SUM((I,J), ZTRXPT(I,J)) / SUM((I,J),'/
     6T39, 'BIND(I,J)$((WADS(I,J) + GWAD(I,J)) GT 0 AND BOUN',
     7'(I,J) NE 0));'/
     812X,'ZUGPD(I,J)$BOUN(I,J)', T37, '= GWAD(I,J) - GGP(I,J);'/
     912X,'ZUGPDT', T37, '= SUM((I,J), ZUGPD(I,J)$BOUN(I,J));')
6011 FORMAT(12X,'ZUGPDTA', T37, '= ZUGPDT / SUM',
     1'((I,J), BIND(I,J)$(GWAD(I,J) GT 0 AND ',
     2'BOUN(I,J) NE 0)$BOUN(I,J));'/
     312X,'ZUT(I,J)$BOUN(I,J)', T37, '= WADS(I,J) + ',
     4'GWAD(I,J) - (SSSW(I,J) + GGP(I,J)) + EPS;'/
     512X,'ZUTT', T37, '= SUM((I,J), ZUT(I,J)$BOUN(I,J));'/
     612X,'ZYCIIR(K)', T37, '= SUM((I,J), CINF(I,J) * ',
     7'(1.0 / SCFACV)$(IRIV(I,J) EQ IRCODE(K))) + EPS;'/
     812X,'ZYCIIRT', T37, '= SUM(K, ZYCIIR(K)) + EPS;')
6012 FORMAT(12X,'ZYGPAG(I,J)$BOUN(I,J)', T37,
     1 '= (GGP(I,J) - MAI(I,J))$(GGP(I,J) GT MAI(I,J)) + EPS;'/
     212X,'ZYOIIR(K)', T37, '= SUM((I,J), OINF(I,J) * ',
     3'(1.0 / SCFACV)$(IRIV(I,J) EQ IRCODE(K))) + EPS;'/
     412X,'ZYOIIRT', T37, '= SUM(K, ZYOIIR(K)) + EPS;'/
     512X,'ZYSAI(I,J)$BOUN(I,J)', T37, '= RIVC(I,J) * ',
     6'(HH(I,J) - RIVS(I,J)) + EPS;'/
     712X,'ZYSAIT', T37, '= SUM((I,J), ZYSAI(I,J)$BOUN(I,J)) + EPS;'/
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    812X,'ZYSAIIR(K)', T37, '= SUM((I,J), ',
    9'ZYSAI(I,J)$(IRIV(I,J) EQ IRCODE(K))) + EPS;')
6013 FORMAT(12X,'ZYSAIIRT', T37, '= SUM(K, ZYSAIIR(K)) + EPS;'/
    112X,'ZYSSWIR(K)', T37, '= SUM((I,J), ',
    2'SSSW(I,J)$(IRIV(I,J) EQ IRCODE(K))) + EPS;'/
    312X,'ZYSSWIRT', T37, '= SUM(K, ZYSSWIR(K)) + EPS;'/
    412X,'ZZCIIR(K)', T37, '= SUM(KK, SUM((I,J),'/
    5T39,'CINF(I,J) * (1.0 / SCFACV)$(IRKC(K,KK) EQ IRIV(I,J)'/
    6T39,'AND IRKC(K,KK) GT 0))) + EPS;'/
    712X,'ZZOIIR(K)', T37, '= SUM(KK, SUM((I,J),'/
    8T39,'OINF(I,J) * (1.0 / SCFACV)$(IRKC(K,KK) EQ IRIV(I,J)'/
    9T39,'AND IRKC(K,KK) GT 0))) + EPS;')
6014 FORMAT(12X,'ZZSAIIR(K)', T37, '= SUM(KK, SUM((I,J),'/
    1T39,'ZYSAI(I,J)$(IRKC(K,KK) EQ IRIV(I,J)'/
    2T39,'AND IRKC(K,KK) GT 0))) + EPS;'/
    312X,'ZZSSWIR(K)', T37, '= SUM(KK, SUM((I,J),'/
    4T39,'SSSW(I,J)$(IRKC(K,KK) EQ IRIV(I,J)'/
    5T39,'AND IRKC(K,KK) GT 0))) + EPS;')
7000 FORMAT(/12X,'B(I,J)          = B(I,J) + EPS;',
    1T54,'BIND(I,J)      = BIND(I,J) + EPS;'/
    212X,'BBOUN(I,J)     = BOUN(I,J) + EPS;',
    3T54,'CCE(I,J)       = CCE(I,J) + EPS;'/
    412X,'GGP(I,J)       = GGP(I,J) + EPS;',
    5T54,'GGPF(I,J)      = GGPF(I,J) + EPS;'/
    612X,'GUSMIN(I,J)    = GUSMIN(I,J) + EPS;',
    7T54,'GWAD(I,J)      = GWAD(I,J) + EPS;'/
    812X,'HH(I,J)        = HH(I,J) + EPS;',
    9T54,'IRIV(I,J)      = IRIV(I,J) + EPS;')
7001 FORMAT( 12X,'MAI(I,J)        = MAI(I,J) + EPS;',
    1T54,'MAIU(I,J)      = MAIU(I,J) + EPS;'/
    212X,'RRCH(I,J)      = RRCH(I,J) + EPS;',
    3T54,'RRCHGUS(I,J)   = RRCHGUS(I,J) + EPS;'/
    412X,'SSSW(I,J)      = SSSW(I,J) + EPS;',
    5T54,'ZDELEVH(I,J)   = ZDELEVH(I,J) + EPS;'/
    612X,'ZDRSH(I,J)     = ZDRSH(I,J) + EPS;',
    7T54,'ZDTOPOH(I,J)   = ZDTOPOH(I,J) + EPS;'/
    812X,'ZEXCESSW(I,J)  = ZEXCESSW(I,J) + EPS;',
    9T54,'ZFSTHIC(I,J)   = ZFSTHIC(I,J) + EPS;')
7002 FORMAT(12X,'ZTGGP(I,J)       = ZTGGP(I,J) + EPS;',
    1T54,'ZTHH(I,J)      = ZTHH(I,J) + EPS;'/
    212X,'ZTRRCH(I,J)    = ZTRRCH(I,J) + EPS;',
    3T54,'ZTRXPGP(I,J)   = ZTRXPGP(I,J) + EPS;'/
    412X,'ZTRXPT(I,J)    = ZTRXPT(I,J) + EPS;',
    5T54,'ZUGPD(I,J)     = ZUGPD(I,J) + EPS;'/
    612X,'ZUT(I,J)       = ZUT(I,J) + EPS;',
    7T54,'ZYGPAG(I,J)    = ZYGPAG(I,J) + EPS;'/
    812X,'ZYSAI(I,J)     = ZYSAI(I,J) + EPS;',
    9T54,'ZYCIIR(K)      = ZYCIIR(K) + EPS;')
7003 FORMAT(12X,'ZYOIIR(K)        = ZYOIIR(K) + EPS;',
    1T54,'ZYSAIIR(K)     = ZYSAIIR(K) + EPS;'/
    212X,'ZYSSWIR(K)     = ZYSSWIR(K) + EPS;',
    3T54,'ZZCIIR(K)      = ZZCIIR(K) + EPS;'/
    412X,'ZZOIIR(K)      = ZZOIIR(K) + EPS;',
    5T54,'ZZSAIIR(K)     = ZZSAIIR(K) + EPS;'/
    612X,'ZZSSWIR(K)     = ZZSSWIR(K) + EPS;')
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      RETURN
      END
CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
CC    SUBROUTINE TDSPLY PRINTS THE SECTION OF THE GAMS               CC
CC    OPTIMIZATION MODEL THAT DISPLAY THE SOLUTION AND IMPORTANT      CC
CC    PARAMETERS.                                                     CC
CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
      SUBROUTINE TDSPLY
      COMMON /CARD B/ IMAXIM, JMAXIM, IPOSTP, IALLOC
      WRITE(6,5001)
      WRITE(6,5002)
      WRITE(6,5003)
      WRITE(6,5004)
      WRITE(6,5005)
      IF(IALLOC .NE. 1) RETURN
      WRITE(6,5006)
      WRITE(6,5007)
 5001 FORMAT(/' DISPLAY BIND;'/ ' DISPLAY BBOUN;'/ ' DISPLAY IRIV;'/
     1' DISPLAY BITOT;'/ ' DISPLAY BITOTC;'/
     2' DISPLAY BITOTV;'/ ' DISPLAY BITOTNR;'/
     3' DISPLAY BITOTR;'/ ' DISPLAY CCE;'/
     4' OPTION  CCET:6;'/ ' DISPLAY CCET;'/
     5' DISPLAY CCETA;'/ ' DISPLAY GGP;'/
     6' DISPLAY GGPF;'/ ' DISPLAY TOTGW;'/
     7' DISPLAY GWAD;'/ ' DISPLAY TOTGWAD;'/
     8' DISPLAY XRGP;'/ ' DISPLAY HH;')
 5002 FORMAT(' DISPLAY HHA;'/ ' DISPLAY HHL;'/
     1' DISPLAY HHS;'/ ' DISPLAY RRCH;'/
     2' DISPLAY RRCHT;'/ ' DISPLAY RRCHTA;'/
     3' DISPLAY GUSMIN;'/ ' DISPLAY ZGUSMINT;'/
     4' DISPLAY RRCHGUS;'/ ' DISPLAY RRCHGUSX;'/
     5' DISPLAY SSSW;'/ ' DISPLAY TOTSW;'/
     6' DISPLAY TOTSWAD;'/ ' DISPLAY XRSSW;'/
     7' DISPLAY TAPP;'/ ' DISPLAY TOTWAD;'/
     8' DISPLAY XRTAPP;'/ ' DISPLAY ZDELEVH;')
 5003 FORMAT(' DISPLAY ZDELEVHA;'/ ' DISPLAY ZDELEVHX;'/
     1' DISPLAY ZDELEVHY;'/ ' DISPLAY ZDRSH;'/
     2' DISPLAY ZDRSHA;'/ ' DISPLAY ZDTOPOH;'/
     3' DISPLAY ZDTOPOHA;'/ ' DISPLAY ZEXCESSW;'/
     4' DISPLAY ZEXCESWT;'/ ' DISPLAY ZFSTHIC;'/
     5' DISPLAY ZFSTHICA;'/ ' DISPLAY ZFSTHICX;'/
     6' DISPLAY ZFSTHICY;'/ ' DISPLAY B;'/
     7' DISPLAY ZISTHICA;'/ ' DISPLAY ZISTHICX;'/
     8' DISPLAY ZISTHICY;'/ ' DISPLAY ZTGGP;')
 5004 FORMAT( ' DISPLAY ZTHH;'/ ' DISPLAY ZTRRCH;'/
     1' DISPLAY ZTRXPGP;'/ ' DISPLAY ZTRXPGPA;'/
     2' DISPLAY ZTRXPT;'/ ' DISPLAY ZTRXPTA;'/
     3' DISPLAY MAI;'/ ' DISPLAY MAIT;'/
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    4' DISPLAY MAIU;'/ ' DISPLAY MAIUT;'/
    5' DISPLAY ZUGPD;'/ ' DISPLAY ZUGPDT;'/
    6' DISPLAY ZUGPDTA;'/ ' DISPLAY ZUT;'/
    7' DISPLAY ZUTT;'/ ' DISPLAY ZYCIIR;'/
    8' DISPLAY ZYCIIRT;'/ ' DISPLAY ZYGPAG;')
 5005 FORMAT(' DISPLAY ZYOIIR;'/ ' DISPLAY ZYOIIRT;'/
    1' DISPLAY ZYSAI;'/ ' DISPLAY ZYSAIT;'/
    2' DISPLAY ZYSAIIR;'/ ' DISPLAY ZYSAIIRT;'/
    3' DISPLAY ZYSSWIR;'/ ' DISPLAY ZYSSWIRT;'/
    4' DISPLAY ZZCIIR;'/ ' DISPLAY ZZOIIR;'/
    5' DISPLAY ZZSAIIR;'/ ' DISPLAY ZZSSWIR;'/
    6' DISPLAY TOTGWMI;'/ ' DISPLAY TOTWADA;'/
    7' DISPLAY TOTWADD;'/ ' DISPLAY TOTWADS;'/
    8' DISPLAY TOTWADT;')
 5006 FORMAT(' DISPLAY SAPR;'/ ' DISPLAY TSAPR;'/ ' DISPLAY SMAY;'/
    1' DISPLAY TSMAY;'/ ' DISPLAY SJUN;'/ ' DISPLAY TSJUN;'/
    2' DISPLAY SJUL;'/ ' DISPLAY TSJUL;'/ ' DISPLAY SAUG;'/
    3' DISPLAY TSAUG;'/ ' DISPLAY SSEP;'/ ' DISPLAY TSSEP;'/
    4' DISPLAY GAPR;'/ ' DISPLAY TGAPR;'/ ' DISPLAY GMAY;'/
    5' DISPLAY TGMAY;'/ ' DISPLAY GJUN;'/ ' DISPLAY TGJUN;'/
    6' DISPLAY GJUL;'/ ' DISPLAY TGJUL;'/ ' DISPLAY GAUG;'/
    7' DISPLAY TGAUG;'/ ' DISPLAY GSEP;'/ ' DISPLAY TGSEP;'/
    8' DISPLAY UAPR;'/ ' DISPLAY TUAPR;'/ ' DISPLAY UMAY;'/
    9' DISPLAY TUMAY;'/ ' DISPLAY UJUN;'/ ' DISPLAY TUJUN;')
 5007 FORMAT(' DISPLAY UJUL;'/ ' DISPLAY TUJUL;'/ ' DISPLAY UAUG;'/
    1' DISPLAY TUAUG;'/ ' DISPLAY USEP;'/ ' DISPLAY TUSEP;')
      RETURN
      END

CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
CC    SUBROUTINE VPSTPR PRINTS THE COMMANDS FILE THAT                 CC
CC    IS CONSISTENT WITH THE REQUIREMENT AS INDICATED IN THE          CC
CC    FILE EARMODEL INPUT A.                                          CC
CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
      SUBROUTINE VPSTPR
      COMMON /CARD A/ NAMEMO(2), IOTYPE, ALLOWL, ALLOWV, SCFACL, SCFACV
      COMMON /CARD B/ IMAXIM, JMAXIM, IPOSTP, IALLOC
      REAL*4 NAMEMO
      WRITE(7,5000) NAMEMO
      GO TO (1,2,3,44), IPOSTP
      GO TO 4
    2 WRITE(7,5020)
      GO TO 4
    3 WRITE(7,5030)
      GO TO 4
   44 WRITE(7,5040)
      GO TO 4
    1 WRITE(7,5001)
      WRITE(7,5002)
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      WRITE(7,5003)
      WRITE(7,5004)
      WRITE(7,5005)
      WRITE(7,5006)
      WRITE(7,5007)
      IF(IALLOC .NE. 1) RETURN
      WRITE(7,5008)
      WRITE(7,5009)
      WRITE(7,5010)
      WRITE(7,5011)
 5000 FORMAT(' TITLE EASTERN ARKANSAS COMPREHENSIVE STUDY AREA (MODEL ',
     1  2A4,')')
 5001 FORMAT(' MATRIX   BBOUN     1 3.0 :1 BIND 1 66'/
     1' MATRIX   IRIV     1 2.0 :1 BIND 1 66'/
     2' SCALAR   BITOT    1 4.0 :1'/ ' SCALAR   BITOTC   1 2.0 :0'/
     3' SCALAR   BITOTV   1 4.0 :0'/ ' SCALAR   BITOTNR  1 4.0 :0'/
     4' SCALAR   BITOTR   1 3.0 :0'/
     5' MATRIX   CCE      1 9.2 :1 BIND 1 66'/
     6' SCALAR   CCET     1 9.5 :0'/ ' SCALAR   CCETA    1 8.2 :0'/
     7' MATRIX   GGP      1 5.2 :1 BIND 1 66'/
     8' MATRIX   GGPF     1 5.2 :1 BIND 1 66'/
     9' SCALAR   TOTGW    1 8.2 :0')
 5002 FORMAT(' MATRIX   GWAD     1 5.2 :1 BIND 1 66'/
     1' SCALAR   TOTGWAD  1 8.2 :0'/ ' SCALAR   XRGP     1 2.2 :0'/
     2' MATRIX   HH       1 3.1 :1 BIND 1 66'/,
     3' SCALAR   HHA      1 3.1 :0'/ ' SCALAR   HHL      1 3.1 :0'/
     4' SCALAR   HHS      1 3.1 :0'/
     5' MATRIX   RRCH     1 5.2 :1 BIND 1 66'/
     6' SCALAR   RRCHT    1 7.2 :0'/ ' SCALAR   RRCHTA   1 5.2 :0'/
     7' MATRIX   GUSMIN   1 6.2 :1 BIND 1 66'/
     8' SCALAR   ZGUSMINT 1 7.2 :0'/
     9' MATRIX   RRCHGUS  1 2.2 :1 BIND 1 66')
 5003 FORMAT(' SCALAR   RRCHGUSX 1 2.2 :0'/
     1' MATRIX   SSSW     1 6.2 :1 BIND 1 66'/
     2' SCALAR   TOTSW    1 8.2 :0'/ ' SCALAR   TOTSWAD  1 8.2 :0'/
     3' SCALAR   XRSSW    1 2.2 :0'/ ' SCALAR   TAPP     1 8.2 :1'/
     4' SCALAR   TOTWAD   1 9.2 :0'/ ' SCALAR   XRTAPP   1 2.2 :0'/
     5' MATRIX   ZDELEVH  1 3.1 :1 BIND 1 66'/
     6' SCALAR   ZDELEVHA 1 3.1 :0'/ ' SCALAR   ZDELEVHX 1 3.1 :0'/
     7' SCALAR   ZDELEVHY 1 3.1 :0'/
     8' MATRIX   ZDRSH    1 3.1 :1 BIND 1 66'/
     9' SCALAR   ZDRSHA   1 3.1 :0')
 5004 FORMAT(' MATRIX   ZDTOPOH  1 3.1 :1 BIND 1 66'/
     1' SCALAR   ZDTOPOHA 1 3.1 :0'/
     2' MATRIX   ZEXCESSW 1 5.2 :1 BIND 1 66'/
     3' SCALAR   ZEXCESWT 1 8.2 :0'/
     4' MATRIX   ZFSTHIC  1 3.1 :1 BIND 1 66'/
     5' SCALAR   ZFSTHICA 1 3.1 :0'/
     6' SCALAR   ZFSTHICX 1 3.1 :0'/ ' SCALAR   ZFSTHICY 1 3.1 :0'/
     7' MATRIX   B        1 3.1 :1 BIND 1 66'/
     8' SCALAR   ZISTHICA 1 3.1 :0'/ ' SCALAR   ZISTHICX 1 3.1 :0'/
     9' SCALAR   ZISTHICY 1 3.1 :0')
 5005 FORMAT(' MATRIX   ZTGGP    1 5.2 :1 BIND 1 66'/
     1' MATRIX   ZTHH     1 3.1 :1 BIND 1 66'/
     2' MATRIX   ZTRRCH   1 5.2 :1 BIND 1 66'/
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     3' MATRIX   ZTRXPGP  1 3.2 :1 BIND 1 66'/
     4' SCALAR   ZTRXPGPA 1 3.2 :0'/
     5' MATRIX   ZTRXPT   1 3.2 :1 BIND 1 66'/
     6' SCALAR   ZTRXPTA  1 3.2 :0'/
     7' MATRIX   MAI      1 5.2 :1 BIND 1 66'/
     8' SCALAR   MAIT     1 8.2 :0'/
     9' MATRIX   MAIU     1 5.2 :1 BIND 1 66')
5006 FORMAT(' SCALAR   MAIUT    1 8.2 :0'/
     1' MATRIX   ZUGPD    1 5.2 :1 BIND 1 66'/
     2' SCALAR   ZUGPDT   1 8.2 :0'/ ' SCALAR   ZUGPDTA  1 5.2 :0'/
     3' MATRIX   ZUT      1 5.2 :1 BIND 1 66'/
     4' SCALAR   ZUTT     1 8.2 :0'/ ' VECTOR   ZYCIIR   1 9.2 :0'/
     5' SCALAR   ZYCIIRT  1 9.2 :0'/
     6' MATRIX   ZYGPAG   1 5.2 :1 BIND 1 66'/
     7' VECTOR   ZYOIIR   1 8.2 :0'/ ' SCALAR   ZYOIIRT  1 9.2 :0'/
     8' MATRIX   ZYSAI    1 8.2 :1 BIND 1 66'/
     9' SCALAR   ZYSAIT   1 9.2 :0'/ ' VECTOR   ZYSAIIR  1 9.2 :0')
5007 FORMAT(' SCALAR   ZYSAIIRT 1 9.2 :0'/
     1' VECTOR   ZYSSWIR  1 9.2 :0'/ ' SCALAR   ZYSSWIRT 1 9.2 :0'/
     2' VECTOR   ZZCIIR   1 9.2 :0'/ ' VECTOR   ZZOIIR   1 9.2 :0'/
     3' VECTOR   ZZSAIIR  1 9.2 :0'/ ' VECTOR   ZZSSWIR  1 9.2 :0'/
     4' SCALAR   TOTGWMI  1 9.0 :1'/ ' SCALAR   TOTWADA  1 9.0 :0'/
     5' SCALAR   TOTWADD  1 9.0 :0'/ ' SCALAR   TOTWADS  1 9.0 :0'/
     6' SCALAR   TOTWADT  1 9.0 :0')
5008 FORMAT(' MATRIX   SAPR     1 5.2 :1 BIND 1 66'/
     1' SCALAR   TSAPR    1 8.2 :0'/
     2' MATRIX   SMAY     1 5.2 :1 BIND 1 66'/
     3' SCALAR   TSMAY    1 8.2 :0'/
     4' MATRIX   SJUN     1 5.2 :1 BIND 1 66'/
     5' SCALAR   TSJUN    1 8.2 :0'/
     6' MATRIX   SJUL     1 5.2 :1 BIND 1 66'/
     7' SCALAR   TSJUL    1 8.2 :0'/
     8' MATRIX   SAUG     1 5.2 :1 BIND 1 66'/
     9' SCALAR   TSAUG    1 8.2 :0')
5009 FORMAT(' MATRIX   SSEP     1 5.2 :1 BIND 1 66'/
     1' SCALAR   TSSEP    1 8.2 :0'/
     2' MATRIX   GAPR     1 5.2 :1 BIND 1 66'/
     3' SCALAR   TGAPR    1 8.2 :0'/
     4' MATRIX   GMAY     1 5.2 :1 BIND 1 66'/
     5' SCALAR   TGMAY    1 8.2 :0'/
     6' MATRIX   GJUN     1 5.2 :1 BIND 1 66'/
     7' SCALAR   TGJUN    1 8.2 :0'/
     8' MATRIX   GJUL     1 5.2 :1 BIND 1 66'/
     9' SCALAR   TGJUL    1 8.2 :0')
5010 FORMAT(' MATRIX   GAUG     1 5.2 :1 BIND 1 66'/
     1' SCALAR   TGAUG    1 8.2 :0'/
     2' MATRIX   GSEP     1 5.2 :1 BIND 1 66'/
     3' SCALAR   TGSEP    1 8.2 :0'/
     4' MATRIX   UAPR     1 5.2 :1 BIND 1 66'/
     5' SCALAR   TUAPR    1 8.2 :0'/
     6' MATRIX   UMAY     1 5.2 :1 BIND 1 66'/
     7' SCALAR   TUMAY    1 8.2 :0'/
     8' MATRIX   UJUN     1 5.2 :1 BIND 1 66'/
     9' SCALAR   TUJUN    1 8.2 :0')
5011 FORMAT(' MATRIX   UJUL     1 5.2 :1 BIND 1 66'/
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     1' SCALAR    TUJUL     1 8.2 :0'/
     2' MATRIX    UAUG      1 5.2 :1 BIND 1 66'/
     3' SCALAR    TUAUG     1 8.2 :0'/
     4' MATRIX    USEP      1 5.2 :1 BIND 1 66'/
     5' SCALAR    TUSEP     1 8.2 :0')
 5020 FORMAT(' MATRIX   HH         1 3.1 :1 BIND 1 66')
 5030 FORMAT(' MATRIX   GGP        1 5.2 :1 BIND 1 66')
 5040 FORMAT(' MATRIX   GGP        1 5.0 :1 BIND 1 66'/
     1' MATRIX    SSSW      1 6.0 :1 BIND 1 66'/
     2' MATRIX    ZUT       1 5.0 :1 BIND 1 66')
    4 RETURN
      END

CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
CC    SUBROUTINE WALLOC PRINTS THE SECTION OF THE GAMS                CC
CC    MODEL THAT IMPLEMENTS THE MONTHLY ALLOCATION MODEL               CC
CC    AS A POSTPROCESSOR TO OPTIMIZATION.                             CC
CC                                                                    CC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CC                                                                    CC
      SUBROUTINE WALLOC
      COMMON /CARD B/ IMAXIM, JMAXIM, IPOSTP, IALLOC
      COMMON /CARD C/ VANAME(22), INVARI(22), NUFILE(22),
     1                INFLAG(22), CVALUE(22), CONVER(22),
     2                NLINHR(22), FRMTIN(22,5), NSDBED(22),
     3                NSDAFD(22), DAYEAR(22), VUNITS(22,4)
      COMMON /BLOCK 1/ IT, IR
      COMMON /BLOCK 2/ RTABLE(70,70), ITABLE(70,70), JT(70)
      COMMON /BLOCK 3/ RMTABL(6,70,70), IMTABL(6,70,70)
      DIMENSION IA(6), A(6)
      REAL*4 MNAME(12), MONAME(6), FRMT(5), DUM, DEEP, AGRI, TYPE
      REAL*4 FRMTIN, VUNITS, DAYEAR, YEAR
      DATA MNAME/'AAPR','AMAY','AJUN','AJUL','AAUG','ASEP',
     1'TAPR','TMAY','TJUN','TJUL','TAUG','TSEP'/
      DATA MONAME/' APR',' MAY','JUNE','JULY','AUG.','SEPT'/
      DATA DEEP/'DEEP'/
      DATA AGRI/'AGRI'/
      IT = 21
      TYPE = AGRI
      YEAR = DAYEAR(21)
  901 DO 800 I=1,70
      DO 800 J=1,70
      RTABLE(I,J) = 0.0
      ITABLE(I,J) = 0
      DO 800 M=1,6
      RMTABL(M,I,J) = 0.0
      IMTABL(M,I,J) = 0
  800 CONTINUE
      IF(INFLAG(IT) .EQ. 0) GO TO 121
      INU = NUFILE(IT)
      DO 501 J=1,5
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501 FRMT(J) = FRMTIN(IT,J)
    NL = NLINHR(IT)
    DO 31 ID=1,NL
    READ(INU,4001) DUM
 31 CONTINUE
    GO TO 300
121 DO 122 M=1,6
    IF(IP .EQ. 21) GO TO 66
    MP = M + 6
    YEAR = DAYEAR(22)
    GO TO 67
 66 MP = M
 67 WRITE(6,5000) MNAME(MP), YEAR, MONAME(M), TYPE,
   1(VUNITS(IT,J),J=1,4), MNAME(MP), CVALUE(IT)
    YEAR = DAYEAR(21)
122 CONTINUE
    GO TO 900
300 DO 102 II=1,4900
    IF(CVALUE(IT) .NE. 1.0) GO TO 330
    READ(INU,FRMT) I,J,(IA(M), M=1,6)
    GO TO 331
330 READ(INU,FRMT) I,J,(A(M), M=1,6)
331 IF(I .LT. 0) GO TO 51
    IF(CVALUE(IT) .NE. 1.0) GO TO 101
    DO 70 M=1,6
 70 IMTABL(M,I,J) = IA(M)
    GO TO 102
101 DO 71 M=1,6
 71 RMTABL(M,I,J) = A(M)
102 CONTINUE
 51 IF(CVALUE(IT) .EQ. 1.0) GO TO 52
    DO 99 I=1,IMAXIM
    DO 99 J=1,JMAXIM
    DO 99 M=1,6
    IF(RMTABL(M,I,J) .LE. -10E10 .OR.
   1   RMTABL(M,I,J) .GE.  10E10) RMTABL(M,I,J) = 0.0
 99 CONTINUE
 52 DO 88 MO=1,6
    DO 89 I=1,IMAXIM
    DO 89 J=1,JMAXIM
    IF(CVALUE(IT) .EQ. 1.0) ITABLE(I,J) = IMTABL(MO,I,J)
    IF(CVALUE(IT) .NE. 1.0) RTABLE(I,J) = RMTABL(MO,I,J)
 89 CONTINUE
    IF(IT .EQ. 21) GO TO 86
    MP = MO + 6
    YEAR = DAYEAR(22)
    GO TO 87
 86 MP = MO
 87 WRITE(6, 5001) MNAME(MP), YEAR, MONAME(MO), TYPE,
   1(VUNITS(IT,J),J=1,4)
    YEAR = DAYEAR(21)
 24 CALL HTABLV
 88 CONTINUE
900 IF(IT .EQ. 22) GO TO 902
    IT = 22
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      TYPE = DEEP
      GO TO 901
  902 WRITE(6, 6000) (VUNITS(21,J),J=1,4), CONVER(21),
     1(VUNITS(22,J),J=1,4), CONVER(22)
      WRITE(6, 6001)
      WRITE(6,7000) YEAR, YEAR, YEAR, YEAR, YEAR
      WRITE(6,7001) YEAR, YEAR, YEAR, YEAR, YEAR
      WRITE(6,7002) YEAR, YEAR, YEAR, YEAR, YEAR
      WRITE(6,7003) YEAR, YEAR, YEAR, YEAR, YEAR
      WRITE(6,7004) YEAR, YEAR, YEAR, YEAR, YEAR
      WRITE(6,7005) YEAR, YEAR, YEAR, YEAR, YEAR
      WRITE(6,7006) YEAR, YEAR, YEAR, YEAR, YEAR
      WRITE(6,7007) YEAR, YEAR, YEAR, YEAR
      WRITE(6,8000)
      WRITE(6,8001)
      WRITE(6,8002)
      WRITE(6,8003)
      WRITE(6,8004)
      WRITE(6,8005)
      WRITE(6,8006)
      WRITE(6,8007)
      WRITE(6,8008)
      WRITE(6,8009)
      WRITE(6,8010)
      WRITE(6,9000)
      WRITE(6,9001)
      WRITE(6,9002)
      WRITE(6,9003)
 4001 FORMAT(A4)
 5000 FORMAT(/' PARAMETER ', A4, '(I,J)  ', 3(A4, ' '),
     1'AQUIFER DEMAND IN ', 4A4/ T12, A4, '(I,J) = ', F10.5)
 5001 FORMAT(/' TABLE  ', A4, '(I,J)  ', 3(A4, ' '),
     1'AQUIFER DEMAND IN ', 4A4)
 6000 FORMAT(/' SCALAR  CFMTAD  CONVERSION FACTOR FROM ', 4A4, T58,
     1'TO ACRE-FT PER MO.', T82, '/', F10.5, T92, '/'/
     2'          CFMDAD  CONVERSION FACTOR FROM ', 4A4, T58,
     3'TO ACRE-FT PER MO.', T82, '/', F10.5, T92, '/;'//
     4T12, 'AAPR(I,J) = (AAPR(I,J) * CFMTAD)$BOUN(I,J);'/
     5T12, 'AMAY(I,J) = (AMAY(I,J) * CFMTAD)$BOUN(I,J);'/
     6T12, 'AJUN(I,J) = (AJUN(I,J) * CFMTAD)$BOUN(I,J);'/
     7T12, 'AJUL(I,J) = (AJUL(I,J) * CFMTAD)$BOUN(I,J);'/
     8T12, 'AAUG(I,J) = (AAUG(I,J) * CFMTAD)$BOUN(I,J);')
 6001 FORMAT(T12, 'ASEP(I,J) = (ASEP(I,J) * CFMTAD)$BOUN(I,J);'/
     1T12, 'TAPR(I,J) = (TAPR(I,J) * CFMDAD)$BOUN(I,J);'/
     2T12, 'TMAY(I,J) = (TMAY(I,J) * CFMDAD)$BOUN(I,J);'/
     3T12, 'TJUN(I,J) = (TJUN(I,J) * CFMDAD)$BOUN(I,J);'/
     4T12, 'TJUL(I,J) = (TJUL(I,J) * CFMDAD)$BOUN(I,J);'/
     5T12, 'TAUG(I,J) = (TAUG(I,J) * CFMDAD)$BOUN(I,J);'/
     6T12, 'TSEP(I,J) = (TSEP(I,J) * CFMDAD)$BOUN(I,J);'/)
 7000 FORMAT(' PARAMETER', T12, 'SAPR(I,J)  ', A4,
     1' SURFACE WATER IN APRIL (ACRE-FT PER MONTH),'/
     2T12, 'SMAY(I,J)  ', A4,
     3' SURFACE WATER IN MAY (ACRE-FT PER MONTH),'/
     4T12, 'SJUN(I,J)  ', A4,
     5' SURFACE WATER IN JUNE (ACRE-FT PER MONTH),'/
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     6T12, 'SJUL(I,J)   ', A4,
     7' SURFACE WATER IN JULY (ACRE-FT PER MONTH),'/
     8T12, 'SAUG(I,J)   ', A4,
     9' SURFACE WATER IN AUGUST (ACRE-FT PER MONTH),')
7001 FORMAT(T12, 'SSEP(I,J)   ', A4,
     1' SURFACE WATER IN SEPTEMBER (ACRE-FT PER MONTH),'/
     2T12, 'GAPR(I,J)   ', A4, ' GROUNDWATER FOR ',
     3'AGRICULTURAL USE IN APRIL (ACRE-FT PER MONTH),'/
     4T12, 'GMAY(I,J)   ', A4, ' GROUNDWATER ',
     5'FOR AGRICULTURAL USE IN MAY (ACRE-FT PER MONTH),'/
     6T12, 'GJUN(I,J)   ', A4, ' GROUNDWATER ',
     7'FOR AGRICULTURAL USE IN JUNE (ACRE-FT PER MONTH),'/
     8T12, 'GJUL(I,J)   ', A4, ' GROUNDWATER ',
     9'FOR AGRICULTURAL USE IN JULY (ACRE-FT PER MONTH),')
7002 FORMAT(T12, 'GAUG(I,J)   ', A4, ' GROUNDWATER ',
     1'FOR AGRICULTURAL USE IN AUGUST (ACRE-FT PER MONTH),'/
     2T12, 'GSEP(I,J)   ', A4, ' GROUNDWATER ',
     3'FOR AGRICULTURAL USE IN SEPTEMBER (ACRE-FT PER MONTH),'/
     4T12, 'UAPR(I,J)   ', A4, ' UNMET GROUNDWATER ',
     5'DEMAND FOR AGRICULTURAL USE IN APRIL (ACRE-FT PER MONTH),'/
     6T12, 'UMAY(I,J)   ', A4, ' UNMET GROUNDWATER ',
     7'DEMAND FOR AGRICULTURAL USE IN MAY (ACRE-FT PER MONTH),'/
     8T12, 'UJUN(I,J)   ', A4, ' UNMET GROUNDWATER ',
     9'DEMAND FOR AGRICULTURAL USE IN JUNE (ACRE-FT PER MONTH),')
7003 FORMAT(T12, 'UJUL(I,J)   ', A4, ' UNMET GROUNDWATER ',
     1'DEMAND FOR AGRICULTURAL USE IN JULY (ACRE-FT PER MONTH),'/
     2T12, 'UAUG(I,J)   ', A4, ' UNMET GROUNDWATER ',
     3'DEMAND FOR AGRICULTURAL USE IN AUGUST (ACRE-FT PER MONTH),'/
     4T12, 'USEP(I,J)   ', A4, ' UNMET GROUNDWATER ',
     5'DEMAND FOR AGRICULTURAL USE IN SEPT. (ACRE-FT PER MONTH),'/
     6T12, 'TSAPR   ', A4, ' TOTAL SURFACE WATER ',
     7'IN APRIL (ACRE-FT PER MONTH),'/
     8T12, 'TSMAY   ', A4, ' TOTAL SURFACE WATER ',
     9'IN MAY (ACRE-FT PER MONTH),')
7004 FORMAT(T12, 'TSJUN   ', A4, ' TOTAL SURFACE WATER ',
     1'IN JUNE (ACRE-FT PER MONTH),'/
     2T12, 'TSJUL   ', A4, ' TOTAL SURFACE WATER ',
     3'IN JULY (ACRE-FT PER MONTH),'/
     4T12, 'TSAUG   ', A4, ' TOTAL SURFACE WATER ',
     5'IN AUGUST (ACRE-FT PER MONTH),'/
     6T12, 'TSSEP   ', A4, ' TOTAL SURFACE WATER ',
     7'IN SEPTEMBER (ACRE-FT PER MONTH),'/
     8T12, 'TGAPR   ', A4, ' TOTAL GROUNDWATER ',
     9'FOR AGRICULTURAL USE IN APRIL (ACRE-FT PER MONTH),')
7005 FORMAT(T12, 'TGMAY   ', A4, ' TOTAL GROUNDWATER ',
     1'FOR AGRICULTURAL USE IN MAY (ACRE-FT PER MONTH),'/
     2T12, 'TGJUN   ', A4, ' TOTAL GROUNDWATER ',
     3'FOR AGRICULTURAL USE IN JUNE (ACRE-FT PER MONTH),'/
     4T12, 'TGJUL   ', A4, ' TOTAL GROUNDWATER ',
     5'FOR AGRICULTURAL USE IN JULY (ACRE-FT PER MONTH),'/
     6T12, 'TGAUG   ', A4, ' TOTAL GROUNDWATER ',
     7'FOR AGRICULTURAL USE IN AUGUST (ACRE-FT PER MONTH),'/
     8T12, 'TGSEP   ', A4, ' TOTAL GROUNDWATER ',
     9'FOR AGRICULTURAL USE IN SEPTEMBER (ACRE-FT PER MONTH),')
7006 FORMAT(T12, 'TUAPR   ', A4, ' TOTAL UNMET GROUNDWATER ',
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     1'DEMAND FOR AGRI USE IN APRIL (ACRE-FT PER MONTH),'/
     2T12, 'TUMAY  ', A4, ' TOTAL UNMET GROUNDWATER ',
     3'DEMAND FOR AGRI USE IN MAY (ACRE-FT PER MONTH),'/
     4T12, 'TUJUN  ', A4, ' TOTAL UNMET GROUNDWATER ',
     5'DEMAND FOR AGRI USE IN JUNE (ACRE-FT PER MONTH),'/
     6T12, 'TUJUL  ', A4, ' TOTAL UNMET GROUNDWATER ',
     7'DEMAND FOR AGRI USE IN JULY (ACRE-FT PER MONTH),'/
     8T12, 'TUAUG  ', A4, ' TOTAL UNMET GROUNDWATER ',
     9'DEMAND FOR AGRI USE IN AUGUST (ACRE-FT PER MONTH),')
7007 FORMAT(T12, 'TUSEP  ', A4, ' TOTAL UNMET GROUNDWATER ',
     1'DEMAND FOR AGRI USE IN SEPT. (ACRE-FT PER MONTH),'/
     2T12, 'AMAI(I,J)    ', A4, ' MUNICIPAL AND INDUSTRIAL ',
     3'GROUNDWATER DEMAND (ACRE-FT PER YEAR),'/
     4T12, 'AGPAG(I,J)   ', A4, ' OPTIMAL GROUNDWATER PUMPING LESS ',
     5'M&I DEMAND (ACRE-FT PER YEAR),'/
     6T12, 'AGGP(I,J)    ', A4, ' OPTIMAL PUMPING (ACRE-FT PER YEAR);'/)
8000 FORMAT(T12, 'AMAI(I,J)',
     1T42, '= (WADT(I,J) - WADA(I,J))$BOUN(I,J);'/
     2T12, 'AMAI(I,J)$(AMAI(I,J) LT 0.0)', T42, '= 0.0;'/
     3T12, 'AGGP(I,J)', T42, '= 0.0;'/ T12, 'AGPAG(I,J)', T42, '= 0.0;'/
     4T12, 'AGGP(I,J)$BOUN(I,J)', T42, '= GP.L(I,J) * (1.0 / SCFACV);'/
     5T12, 'AGPAG(I,J)$BOUN(I,J)', T42, '= (AGGP(I,J) - AMAI(I,J))',
     6'$(AGGP(I,J) GT AMAI(I,J));'/)
8001 FORMAT(T12, 'GSEP(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     1'(ASEP(I,J) - TSEP(I,J))$(AGPAG(I,J) GE (ASEP(I,J) - '/
     2T34, 'TSEP(I,J))) + AGPAG(I,J)$(AGPAG(I,J) LT ',
     3'(ASEP(I,J) - TSEP(I,J)));'// T12, 'GAUG(I,J)$BOUN(I,J)', T32,
     4'= 0.0 + (AAUG(I,J) - TAUG(I,J))$((AGPAG(I,J) - GSEP(I,J) GE '/
     5T34, '(AAUG(I,J) - TAUG(I,J))) + (AGPAG(I,J) - GSEP(I,J))'/
     6T34, '$(AGPAG(I,J) - GSEP(I,J)) LT (AAUG(I,J) - TAUG(I,J)));'/)
8002 FORMAT(T12, 'GJUL(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     1'(AJUL(I,J) - TJUL(I,J))$((AGPAG(I,J) - GSEP(I,J) - '/
     2T34, 'GAUG(I,J)) GE (AJUL(I,J) - TJUL(I,J))) + (AGPAG(I,J) - '/
     3T34, 'GSEP(I,J) - GAUG(I,J))$((AGPAG(I,J) - GSEP(I,J) - '/
     4T34, 'GAUG(I,J)) LT (AJUL(I,J) - TJUL(I,J)));'//
     5T12, 'GJUN(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     6'(AJUN(I,J) - TJUN(I,J))$((AGPAG(I,J) - '/
     7T34, 'GSEP(I,J) - GAUG(I,J) - GJUL(I,J)) GE (AJUN(I,J) -'/
     8T34, 'TJUN(I,J))) + (AGPAG(I,J) - GSEP(I,J) - GAUG(I,J) -'/
     9T34, 'GJUL(I,J))$((AGPAG(I,J) - GSEP(I,J) - GAUG(I,J) -'/
     9T34, 'GJUL(I,J)) LT (AJUN(I,J) - TJUN(I,J)));'/)
8003 FORMAT(T12, 'GMAY(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     1'(AMAY(I,J) - TMAY(I,J))$((AGPAG(I,J) - GSEP(I,J) -'/
     2T34, 'GAUG(I,J) - GJUL(I,J) - GJUN(I,J)) GE (AMAY(I,J) -'/
     3T34, 'TMAY(I,J))) + (AGPAG(I,J) - GSEP(I,J) - GAUG(I,J) -'/
     4T34, 'GJUL(I,J) - GJUN(I,J))$((AGPAG(I,J) - GSEP(I,J) -'/
     5T34, 'GAUG(I,J) - GJUL(I,J) - GJUN(I,J)) LT (AMAY(I,J) -'/
     6T34, 'TMAY(I,J)));'/)
8004 FORMAT(T12, 'GAPR(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     1'(AAPR(I,J) - TAPR(I,J))$((AGPAG(I,J) - GSEP(I,J) -'/
     2T34, 'GAUG(I,J) - GJUL(I,J) - GJUN(I,J) - GMAY(I,J)) GE'/
     3T34, '(AAPR(I,J) - TAPR(I,J))) + (AGPAG(I,J) - GSEP(I,J) -'/
     4T34, 'GAUG(I,J) - GJUL(I,J) - GJUN(I,J) - GMAY(I,J))'/
     5T34, '$((AGPAG(I,J) - GSEP(I,J) - GAUG(I,J) - GJUL(I,J) -'/
     6T34, 'GJUN(I,J) - GMAY(I,J)) LT (AAPR(I,J) - TAPR(I,J)));'//
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     7T12, 'SAPR(I,J)$BOUN(I,J)', T32, '= 0.0 +((AAPR(I,J) - ',
     8'TAPR(I,J)) - GAPR(I,J))'/ T34, ' $(SSSW(I,J)',
     9'GE ((AAPR(I,J) - TAPR(I,J)) - GAPR(I,J))) +'/ T34, 'SSSW(I,J)',
     9'$(SSSW(I,J) LT ((AAPR(I,J) - TAPR(I,J)) - GAPR(I,J)));'/)
8005 FORMAT(T12, 'SMAY(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     1'((AMAY(I,J) - TMAY(I,J)) - GMAY(I,J))$((SSSW(I,J) -'/
     2T34, 'SAPR(I,J)) GE ((AMAY(I,J) - TMAY(I,J)) - GMAY(I,J))) +'/
     3T34, '(SSSW(I,J) - SAPR(I,J))$((SSSW(I,J) - SAPR(I,J))'/
     4T34, 'LT ((AMAY(I,J) - TMAY(I,J)) - GMAY(I,J)));'//
     5T12, 'SJUN(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     6'((AJUN(I,J) - TJUN(I,J)) - GJUN(I,J))'/
     7T34, '$((SSSW(I,J) - SMAY(I,J) - SAPR(I,J))'/
     8T34, 'GE ((AJUN(I,J) - TJUN(I,J)) - GJUN(I,J))) + (SSSW(I,J) -'/
     9T34, 'SMAY(I,J) - SAPR(I,J))$((SSSW(I,J) - SMAY(I,J) -'/
     9T34, 'SAPR(I,J)) LT ((AJUN(I,J) - TJUN(I,J)) - GJUN(I,J)));'/)
8006 FORMAT(T12, 'SJUL(I,J)$BOUN(I,J)', T32, '= 0.0 +',
     1'((AJUL(I,J) - TJUL(I,J)) - GJUL(I,J))$((SSSW(I,J) -'/
     2T34, 'SJUN(I,J) - SMAY(I,J) - SAPR(I,J)) GE ((AJUL(I,J) -'/
     3T34, 'TJUL(I,J)) - GJUL(I,J))) + (SSSW(I,J) - SJUN(I,J) -'/
     4T34, 'SMAY(I,J) - SAPR(I,J))$((SSSW(I,J) - SJUN(I,J) -'/
     5T34, 'SMAY(I,J) - SAPR(I,J)) LT ((AJUL(I,J) - TJUL(I,J)) -'/
     6T34, 'GJUL(I,J)));'/)
8007 FORMAT(T12, 'SAUG(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     1'((AAUG(I,J) - TAUG(I,J)) - GAUG(I,J))'/
     2T34, '$((SSSW(I,J) - SJUL(I,J) - SJUN(I,J) - SMAY(I,J) -'/
     3T34, 'SAPR(I,J)) GE ((AAUG(I,J) - TAUG(I,J)) - GAUG(I,J))) +'/
     4T34, '(SSSW(I,J) - SJUL(I,J) - SJUN(I,J) - SMAY(I,J) -'/
     5T34, 'SAPR(I,J))$((SSSW(I,J) - SJUL(I,J) - SJUN(I,J) -'/
     6T34, 'SMAY(I,J) - SAPR(I,J)) LT ((AAUG(I,J) - TAUG(I,J)) -'/
     7T34, 'GAUG(I,J)));'/)
8008 FORMAT(T12, 'SSEP(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     1'((ASEP(I,J) - TSEP(I,J)) - GSEP(I,J))$((SSSW(I,J) -'/
     2T34, 'SAUG(I,J) - SJUL(I,J) - SJUN(I,J) - SMAY(I,J) -'/
     3T34, 'SAPR(I,J)) GE ((ASEP(I,J) - TSEP(I,J)) - GSEP(I,J))) +'/
     4T34, '(SSSW(I,J) - SAUG(I,J) - SJUL(I,J) - SJUN(I,J) -'/
     5T34, 'SMAY(I,J) - SAPR(I,J))$((SSSW(I,J) - SAUG(I,J) -'/
     6T34, 'SJUL(I,J) - SJUN(I,J) - SMAY(I,J) - SAPR(I,J))'/
     7T34, 'LT ((ASEP(I,J) - TSEP(I,J)) - GSEP(I,J)));'/)
8009 FORMAT(T12, 'UAPR(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     1'(AAPR(I,J) - TAPR(I,J)) - GAPR(I,J) - SAPR(I,J);'/
     2T12, 'UMAY(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     3'(AMAY(I,J) - TMAY(I,J)) - GMAY(I,J) - SMAY(I,J);'/
     4T12, 'UJUN(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     5'(AJUN(I,J) - TJUN(I,J)) - GJUN(I,J) - SJUN(I,J);'/
     6T12, 'UJUL(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     7'(AJUL(I,J) - TJUL(I,J)) - GJUL(I,J) - SJUL(I,J);'/
     8T12, 'UAUG(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     9'(AAUG(I,J) - TAUG(I,J)) - GAUG(I,J) - SAUG(I,J);')
8010 FORMAT(T12, 'USEP(I,J)$BOUN(I,J)', T32, '= 0.0 + ',
     1'(ASEP(I,J) - TSEP(I,J)) - GSEP(I,J) - SSEP(I,J);'/)
9000 FORMAT(T12, 'TSAPR = SUM((I,J), SAPR(I,J)$BOUN(I,J)) + EPS;'/
     1T12, 'TSMAY = SUM((I,J), SMAY(I,J)$BOUN(I,J)) + EPS;'/
     2T12, 'TSJUN = SUM((I,J), SJUN(I,J)$BOUN(I,J)) + EPS;'/
     3T12, 'TSJUL = SUM((I,J), SJUL(I,J)$BOUN(I,J)) + EPS;'/
     4T12, 'TSAUG = SUM((I,J), SAUG(I,J)$BOUN(I,J)) + EPS;'/
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     5T12, 'TSSEP = SUM((I,J), SSEP(I,J)$BOUN(I,J)) + EPS;'//
     6T12, 'TGAPR = SUM((I,J), GAPR(I,J)$BOUN(I,J)) + EPS;'/
     7T12, 'TGMAY = SUM((I,J), GMAY(I,J)$BOUN(I,J)) + EPS;'/
     8T12, 'TGJUN = SUM((I,J), GJUN(I,J)$BOUN(I,J)) + EPS;'/
     9T12, 'TGJUL = SUM((I,J), GJUL(I,J)$BOUN(I,J)) + EPS;')
9001 FORMAT(T12, 'TGAUG = SUM((I,J), GAUG(I,J)$BOUN(I,J)) + EPS;'/
     1T12, 'TGSEP = SUM((I,J), GSEP(I,J)$BOUN(I,J)) + EPS;'//
     2T12, 'TUAPR = SUM((I,J), UAPR(I,J)$BOUN(I,J)) + EPS;'/
     3T12, 'TUMAY = SUM((I,J), UMAY(I,J)$BOUN(I,J)) + EPS;'/
     4T12, 'TUJUN = SUM((I,J), UJUN(I,J)$BOUN(I,J)) + EPS;'/
     5T12, 'TUJUL = SUM((I,J), UJUL(I,J)$BOUN(I,J)) + EPS;'/
     6T12, 'TUAUG = SUM((I,J), UAUG(I,J)$BOUN(I,J)) + EPS;'/
     7T12, 'TUSEP = SUM((I,J), USEP(I,J)$BOUN(I,J)) + EPS;'//
     8T12, 'SAPR(I,J) = SAPR(I,J) + EPS;'/
     9T12, 'SMAY(I,J) = SMAY(I,J) + EPS;')
9002 FORMAT(T12, 'SJUN(I,J) = SJUN(I,J) + EPS;'/
     1T12, 'SJUL(I,J) = SJUL(I,J) + EPS;'/
     2T12, 'SAUG(I,J) = SAUG(I,J) + EPS;'/
     3T12, 'SSEP(I,J) = SSEP(I,J) + EPS;'//
     4T12, 'GAPR(I,J) = GAPR(I,J) + EPS;'/
     5T12, 'GMAY(I,J) = GMAY(I,J) + EPS;'/
     6T12, 'GJUN(I,J) = GJUN(I,J) + EPS;'/
     7T12, 'GJUL(I,J) = GJUL(I,J) + EPS;'/
     8T12, 'GAUG(I,J) = GAUG(I,J) + EPS;'/
     9T12, 'GSEP(I,J) = GSEP(I,J) + EPS;'/)
9003 FORMAT(T12, 'UAPR(I,J) = UAPR(I,J) + EPS;'/
     1T12, 'UMAY(I,J) = UMAY(I,J) + EPS;'/
     2T12, 'UJUN(I,J) = UJUN(I,J) + EPS;'/
     3T12, 'UJUL(I,J) = UJUL(I,J) + EPS;'/
     4T12, 'UAUG(I,J) = UAUG(I,J) + EPS;'/
     5T12, 'USEP(I,J) = USEP(I,J) + EPS;')
      RETURN
      END
```

APPENDIX B

VILMA EXEC Program Listing

```
/* VILMA EXEC                                                         */
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
/*&                                                                 &*/
/*&     VILMA EXEC ALLOWS THE USER TO INTERACTIVELY PROVIDE         &*/
/*&  INFORMATION TO GENERATE THE GAMS MODEL FOR THE STUDY AREA      &*/
/*&                                                                 &*/
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                                        &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                 VILMA                  &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                                        &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&            CODED AND TESTED            &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                   BY                   &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&           R. R. A. CANTILLER           &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                                        &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&        UNDER THE SUPERVISION OF        &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&             R. C. PERALTA              &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                                        &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&  WATER RESOURCES MANAGEMENT LABORATORY &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&   AGRICULTURAL ENGINEERING DEPARTMENT  &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&         UNIVERSITY OF ARKANSAS         &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&      FAYETTEVILLE, ARKANSAS 72701      &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&       TELEPHONE: (501) 575-2848        &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                                        &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                FOR THE                 &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&         U. S. GEOLOGICAL SURVEY        &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&         LITTLE ROCK, ARKANSAS          &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                                        &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                  AND                   &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&      U. S. ARMY CORPS OF ENGINEERS     &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                                        &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
'SET MSG OFF'
'FILEDEF * CLEAR'
'CLRSCRN'
say ' '
say '****         HELLO!  YOU HAVE INITIATED YOUR SESSION WITH          ****'
say ' '
say '************************************************************************'
say '**                                                                    **'
say '**                              VILMA                                 **'
say '**      (Virtually Interactive Large-scale Model for Arkansas)        **'
SAY '**         -         -         -         -         -                  **'
say '************************************************************************'
say ' '
say '****  1. Are you ready to provide the FILENAME, FILETYPE, and FILEMODE'
say '         of each of the required data bank files?'
say '****  2. Are you ready to provide the RECORD LENGTH of these files?'
say '****  3. Have you created the file EARMODEL INPUT A?'
say '****  4. Have you established a PASSWORD for your A disk?'
say '****  5. Have you chosen a NAME for this run?'
```

```
say '****  6. Have you called the operator (501-575-2904) to mount RICHO1?'
say ' '
say ' '
say '** Please enter YES if you answered all six questions affirmatively,'
say '   otherwise please enter NO.'
pull answer
if answer = 'NO' then signal LOGOFF
'CLRSCRN'
address COMMAND 'CP LINK RP27021 193 195 RR RRGOBLET'
'ACCESS 195 F/A'
say ' '
say ' '
say ' '
say ' '
say '** Please press the RETURN key.'
pull one
'CLRSCRN'
say ' '
say ' '
say '** Please enter YES if you wish to implement the'
say '** monthly allocation model, otherwise enter NO.'
pull two
'CLRSCRN'
say ' '
say '** Please be READY TO PROVIDE the FILE NAMES and RECORD LENGTHS of files for:
say ' '
say '*  1. AQUIFER TOP                          11. RIVER INDICATOR ARRAY          *
say '*  2. AQUIFER BOTTOM                       12. OVERLAND INFLOW                *
say '*  3. BOUNDARY ARRAY                       13. RIVER CONDUCTANCE VALUES       *
say '*  4. LOWER LIMIT ON EFFLUENT              14. LOWER LIMIT ON RECHARGE        *
say '*  5. UPPER LIMIT ON EFFLUENT VALUES           FOR CONSTANT HEAD CELLS        *
say '*  6. INFLUENT VALUES                      15. RIVER STAGE VALUES             *
SAY '*  7. INITIAL HEAD ELEVATION               16. GROUND ELEVATION               *
say '*  8. LOWER LIMIT ON GROUNDWATER PUMPING  17. AGRICULTURAL GROUNDWATER DEMAND *
say '*  9. GROUNDWATER DEMAND OF                18. DEEP AQUIFER DEMAND            *
SAY '*     NON-ARKANSAS CELLS                   19. SURFACE WATER DEMAND           *
say '* 10. HYDRAULIC CONDUCTIVITY VALUES        20. TOTAL WATER DEMAND             *
if two = 'YES' then signal MONTHLY
signal NOMONTH
 MONTHLY:
say '*                                          21. MONTHLY AGRICULTURAL DEMAND    *
say '*                                          22. MONTHLY DEEP AQUIFER DEMAND    *
NOMONTH: say ' '
SAY '** Do you wish to provide the filename and record length'
say '** information by using your own file definition EXEC?'
say ' '
say '** Please enter YES or NO.'
pull answer1
if answer1 = 'YES' then signal PROVIDE
'CLRSCRN'
say ' '
say ' '
say '** You have chosen to provide the filenames and record lengths of'
say '   of the required data files INTERACTIVELY.'
```

```
say ' '
say ' '
say '** Please enter GO if you are ready and wish to continue,'
say '   otherwise enter STOP.'
pull answer2
if answer2 = 'STOP' then signal LOGOFF
if answer2 = 'GO' then signal USUAL
PROVIDE: 'CLRSCRN'
say ' '
say ' '
say '**** You have chosen to provide the filenames and record lengths of'
say '     the required data files by using your own file definition EXEC.'
say ' '
say ' '
say '**** Please be reminded that the of name should be DATADEFN EXEC A.'
say ' '
say '**** Please make sure that DATADEFN EXEC A'
say '**** does not CLEAR filedef nor use numbers 1 through 9.'
say ' '
say ' '
say '**** Do you need additional time to prepare DATADEFN EXEC A'
say '**** and wish to resume your VILMA session later?'
say ' '
say ' '
say '** Please enter YES or NO.'
pull answer3
if answer3 = 'YES' then signal LOGOFF
'CLRSCRN'
'EXEC DATADEFN'
signal SUBMIT
USUAL : 'EXEC EARCS'
SUBMIT: 'CLRSCRN'
say ' '
say ' '
say '** Please enter the NAME OF THIS RUN.'
pull modname
say ' '
say ' '
SAY '** PLEASE WAIT .......'
'FILEDEF 05 DISK EARMODEL INPUT A (LRECL 80 BLKSIZE 80 RECFM F'
'FILEDEF 06 DISK' MODNAME 'GAMS A (LRECL 121'
'FILEDEF 07 DISK' modname 'COMMANDS A (RECFM F LRECL 80'
'EARMODEL'
push modname
'EXEC EARCSXR4'
'CLRSCRN'
say ' '
say ' '
say ' '
say ' '
say '**** YOU HAVE JUST COMPLETED A SESSION WITH VILMA'
say ' '
say ' '
say '**** The optimization model 'modname
```

```
say '      has been submitted as a batch job, class R.'
say '**** Please call the machine room operator at 575-2904 at the'
say '      University of Arkansas and request that BATCH-6 be released.'
say '**** Issue the command BSTATUS to verify that the job has started.'
say '**** Receive the results from the reader after job completion'
say '      (runs for the Eastern Arkansas Comprehensive Study area'
say '      usually get completed after 2 to 3 hours.)'
if answer = 'YES' then signal NORMAL
LOGOFF: 'CLRSCRN'
say ' '
say ' '
say '**** YOUR VILMA SESSION IS NOW TERMINATED.'
say '**** PLEASE ATTEND TO THE APPROPRIATE TASK OR TASKS'
say '**** PRIOR TO INITIATING YOUR NEXT VILMA SESSION.'
say ' '
say ' '
if answer = 'NO' then signal FINAL
NORMAL: say ' '
say ' '
FINAL : say '**** HAVE A GOOD DAY! ****'
        say '****       BYE        ****'
say ' '
say ' '
```

APPENDIX C

EARCS EXEC Program Listing

```
/* EARCS EXEC                                                             */
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
/*&                                                                     &*/
/*& THE EARCS EXEC ALLOWS THE USER TO SPECIFY THE FILE NAMES OF         &*/
/*& THE DATA FILES OF THE STUDY AREA FOR INPUT TO THE GAMS MODEL        &*/
/*&                                                                     &*/
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                                           &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                EARCS EXEC                 &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&           is an integral part of          &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                   VILMA                   &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&                                           &&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
/*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*/
'CLRSCRN'
say 'Please enter YES if you wish to implement the'
say 'monthly allocation model, otherwise enter NO.'
pull answer
var = 0
REPEATS: 'CLRSCRN'
         say ' '
         say ' '
         var = var + 1
         if answer = 'YES' then signal MONTHLY
         signal NOMONTH
 NOMONTH:  if var = 21 then signal LAST
         signal ADD10
 MONTHLY:  if var = 23 then signal LAST
 ADD10:  varp10 = var + 10
 AGAIN: 'CLRSCRN'
 say '** Please enter the filename, filetype, and filemode of the'
         signal PRINTS
 BACK: pull fn ft fm
      say '** What is the record length of file' fn ft fm '?'
      pull length
      say '** You have entered the following information:'
      say '   The record length of file ' fn ft fm 'is' length '.'
      say '  '
      say '** Please enter YES if you need to make changes,'
      say '** otherwise enter NO.'
      pull change
      if change = 'YES' then signal AGAIN
      if change = 'NO' then signal GOON
      signal AGAIN
GOON: "FILEDEF" varp10 "DISK" fn ft fm "(RECFM F LRECL" length
      signal REPEATS
PRINTS: select
           when var =  1 then signal ATOP
           when var =  2 then signal BOTT
           when var =  3 then signal BDUN
           when var =  4 then signal CELO
```

```
          when var =  5 then signal CEUP
          when var =  6 then signal CINF
          when var =  7 then signal ELEV
          when var =  8 then signal GPLO
          when var =  9 then signal GWMI
          when var = 10 then signal HYCN
          when var = 11 then signal IRIV
          when var = 12 then signal OINF
          when var = 13 then signal RIVC
          when var = 14 then signal RCHL
          when var = 15 then signal RIVS
          when var = 16 then signal TOPO
          when var = 17 then signal WADA
          when var = 18 then signal WADD
          when var = 19 then signal WADS
          when var = 20 then signal WADT
          when var = 21 then signal MODA
          when var = 22 then signal MOAD
          SIGNAL BACK
       end
ATOP: say '   data file for the AQUIFER TOP'
      say '   (fn ft fm, e.g., top data a).'
      signal BACK
BOTT: say '   data file for the AQUIFER BOTTOM'
      say '   (fn ft fm, e.g., bot data a).'
      signal BACK
BOUN: say '   data file for the BOUNDARY ARRAY'
      say '   (fn ft fm, e.g., bound data a).'
      signal BACK
CELO: say '   data file for the LOWER LIMIT ON EFFLUENT'
      say '   (fn ft fm, e.g., celow data a).'
      signal BACK
CEUP: say '   data file for the UPPER LIMIT ON EFFLUENT'
      say '   (fn ft fm, e.g., ceup data a).'
      signal BACK
CINF: say '   data file for the INFLUENT VALUES'
      say '   (fn ft fm, e.g., influent data a).'
      signal BACK
ELEV: say '   data file for the INITIAL HEAD ELEVATION'
      say '   (fn ft fm, e.g., inithead data a).'
      signal BACK
GPLO: say '   data file for the LOWER LIMIT ON GROUNDWATER PUMPING'
      say '   (fn ft fm, e.g., gplower data a).'
      signal BACK
GWMI: say '   data file for the GROUNDWATER DEMAND OF NON-ARKANSAS CELLS'
      say '   (fn ft fm, e.g., nonargw data a).'
      signal BACK
HYCN: say '   data file for the HYDRAULIC CONDUCTIVITY VALUES'
      say '   (fn ft fm, e.g., hycon data a).'
      signal BACK
IRIV: say '   data file for the RIVER INDICATOR ARRAY'
      say '   (fn ft fm, e.g., ir data a).'
      signal BACK
OINF: say '   data file for the OVERLAND INFLOW'
```

```
      say '   (fn ft fm, e.g., oi data a).'
      signal BACK
RIVC: say '   data file for the RIVER CONDUCTANCE VALUES'
      say '   (fn ft fm, e.g., rc data a).'
      signal BACK
RCHL: say '   data file for the LOWER LIMIT ON RECHARGE FOR CONSTANT HEAD CELLS
      say '   (fn ft fm, e.g., rchmin data a).'
      signal BACK
RIVS: say '   data file for the RIVER STAGE VALUES'
      say '   (fn ft fm, e.g., rs data a).'
      signal BACK
TOPO: say '   data file for the GROUND ELEVATION'
      say '   (fn ft fm, e.g., topo data a).'
      signal BACK
WADA: say '   data file for the AGRICULTURAL GROUNDWATER DEMAND'
      say '   (fn ft fm, e.g., wada data a).'
      signal BACK
WADD: say '   data file for the DEEP AQUIFER DEMAND'
      say '   (fn ft fm, e.g., deepaqui data a).'
      signal BACK
WADS: say '   data file for the SURFACE WATER DEMAND'
      say '   (fn ft fm, e.g., swad data a).'
      signal BACK
WADT: say '   data file for the TOTAL WATER DEMAND'
      say '   (fn ft fm, e.g., twad data a).'
      signal BACK
MODA: say '   data file for the MONTHLY AGRICULTURAL DEMAND for the months of'
      say '                       APRIL through SEPTEMBER'
      say '   (fn ft fm  e g   moag data a).'
      signal BACK
MOAD: say '   data file for the monthly DEEP AQUIFER DEMAND for the months of'
      say '                       APRIL through SEPTEMBER'
      say '   (fn ft fm, e.g., moda data a).'
      signal BACK
LAST: 'CLRSCRN'
say '    '
say '    '
```

APPENDIX D

River Reach Classification of Cells

Appendix D provides an illustrative example of the procedure to: a) assign river cell codes to each river cell, and b) classify river cells according to river reach. The user needs to know the river code of each cell in creating the IRIV (river indicator) data file. In addition, the user needs to know the river reach classification of each river cell to be able to provide the D-type and E-type cards of the file EARMODEL INPUT A and/or the file RREACH DATA A.

The following step-by-step procedure classifies river cells by river reach. Each step is pictorially illustrated in Figures D.1 to D.7.

1. Assign a positive number to each effluent cell.

   a) Assign the number 1 to the most upstream effluent cell.
   b) Increment the number by 1 and assign the new number to the next effluent cell.
   c) Repeat step 1.a) until the most downstream effluent cell is given a number.

2. Assign the appropriate river code to each river cell.

   a) Assign the river code 1 to each cell upstream of effluent cell number 1.
   b) Assign river code k to each cell upstream of effluent cell number k unless the cell has already been assigned a river code.
   c) Repeat step 2.a) until every river cell in the system has a river code.

3. Classify the river cells by river reach number.

   a) Be reminded that the number of river reaches is equal to the number of effluent cells.
   b) Classify all river cells upstream of effluent cell k as cells that belong to river reach k.

Step 1 has been applied to the river cells shown in Figrue D.1. There are five (5) effluent cells in this example river system. The most downstream effluent cell has been assigned the number 5. Figure D.2 is the result of step 2. With the river codes established, the user can create the IRIV data file at this point (the IRIV data file needs the following information for each cell: row index, column index, and river code). The resulting river reach classification after step 3 is shown in Figures D.3 to D.7. The cells in river reach 1, 2, 3, 4, and 5 are shown as shaded cells in Figures D.3, D.4, D.5, D.6, and D.7; respectively. Take note that each river cell is included in two or more river reaches.

In this example, the user is now able to create the following files:

I. If the user chooses to provide both D-type and E-type cards, that part of the file EARMODEL INPUT A is shown below:

```
          5           0
  1  1
  2  2
  3  1  2  3
  4  4
  5  1  2  3  4  5
```

II. If the user chooses to provide only the D-type card of the file EARMODEL INPUT A, the file RREACH DATA A is also required. In this illustrative example, the files are shown below:

a) D-type card of EARMODEL INPUT A

```
          5           1
```

b) RREACH DATA A

```
  1  1
  2  2
  3  1  2  3
  4  4
  5  1  2  3  4  5
```

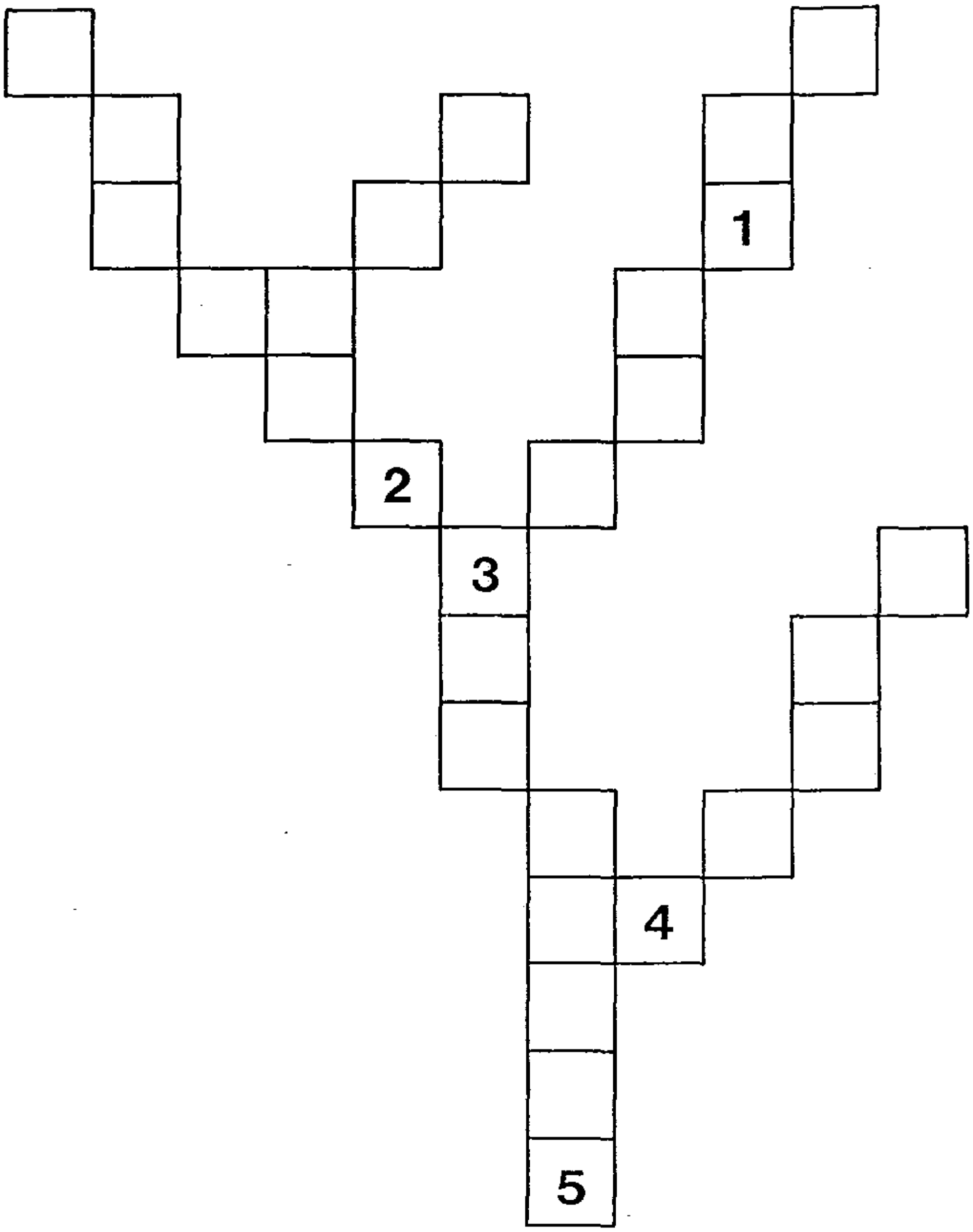

Figure D.1 Numbering of Effluent Cells

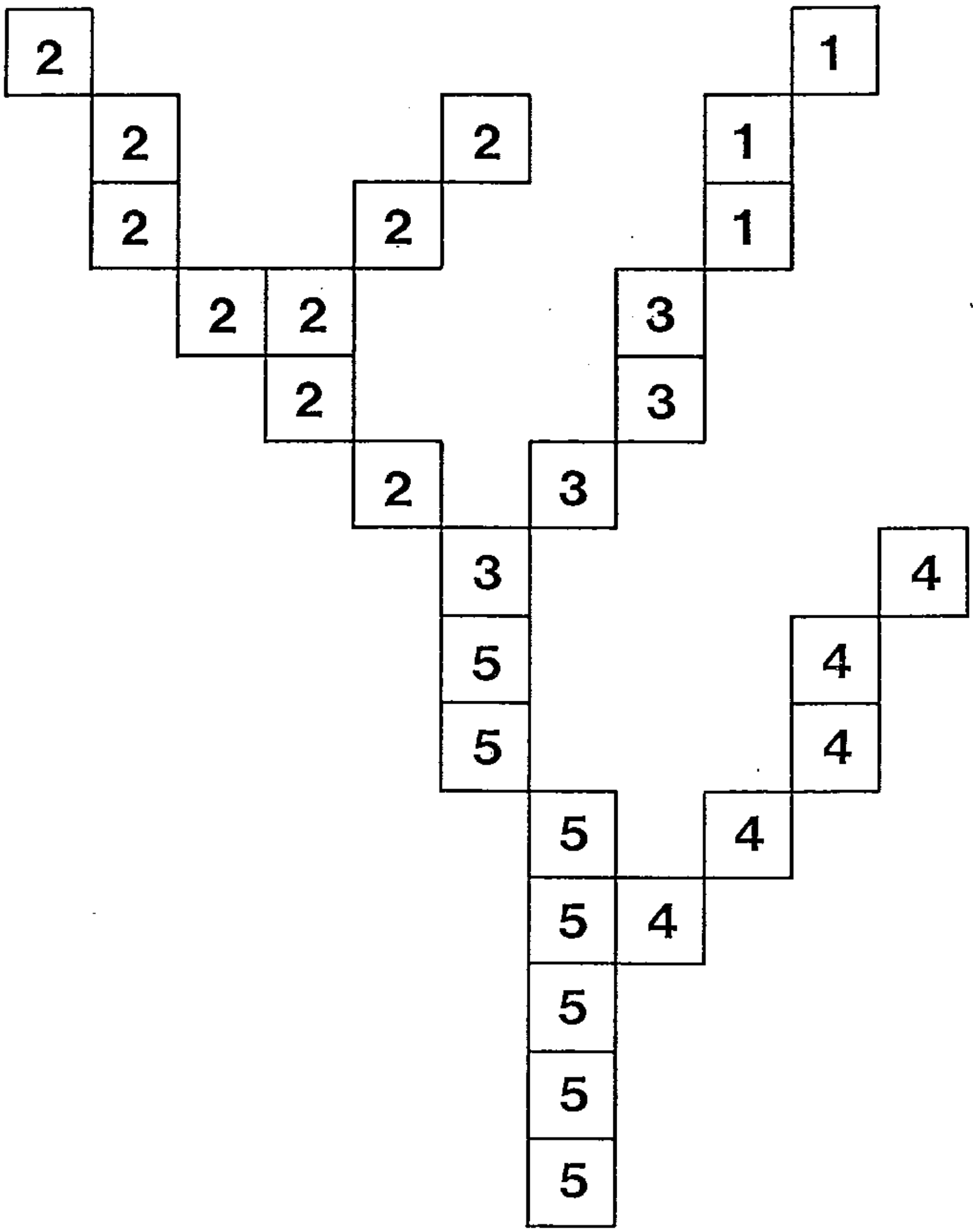

Figure D.2 River Codes of the Cells

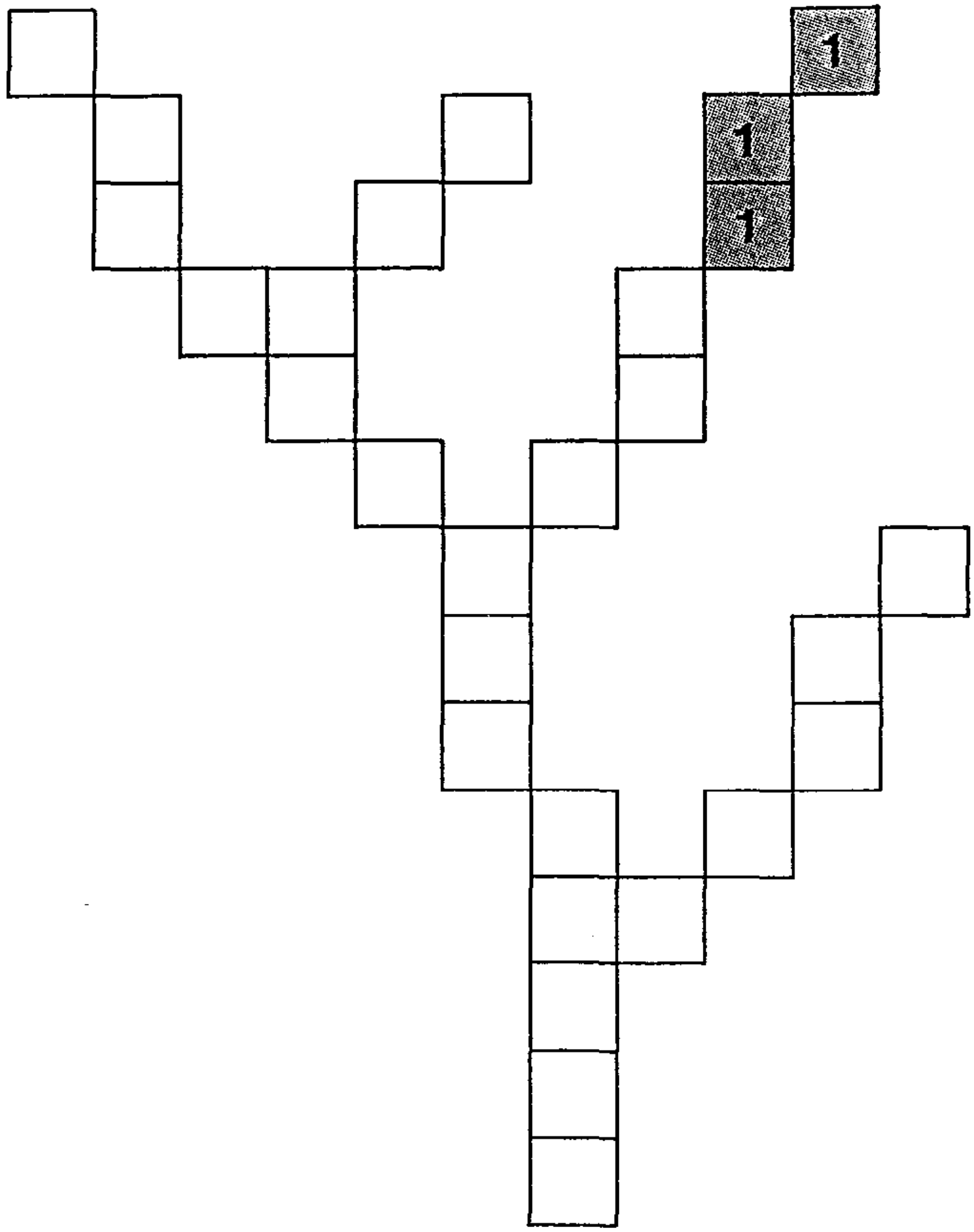

Figure D.3 Cells in River Reach 1

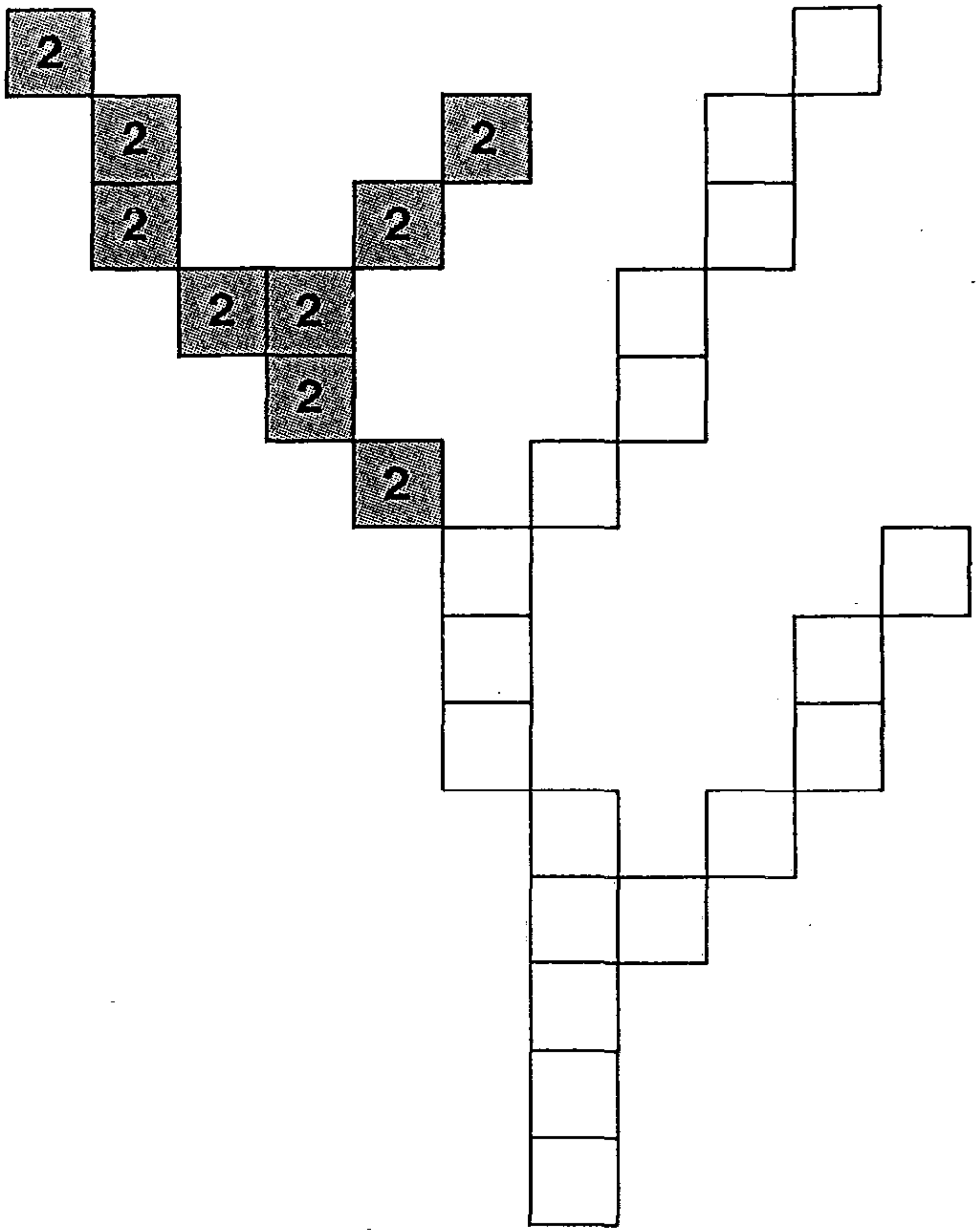

Figure D.4 Cells in River Reach 2

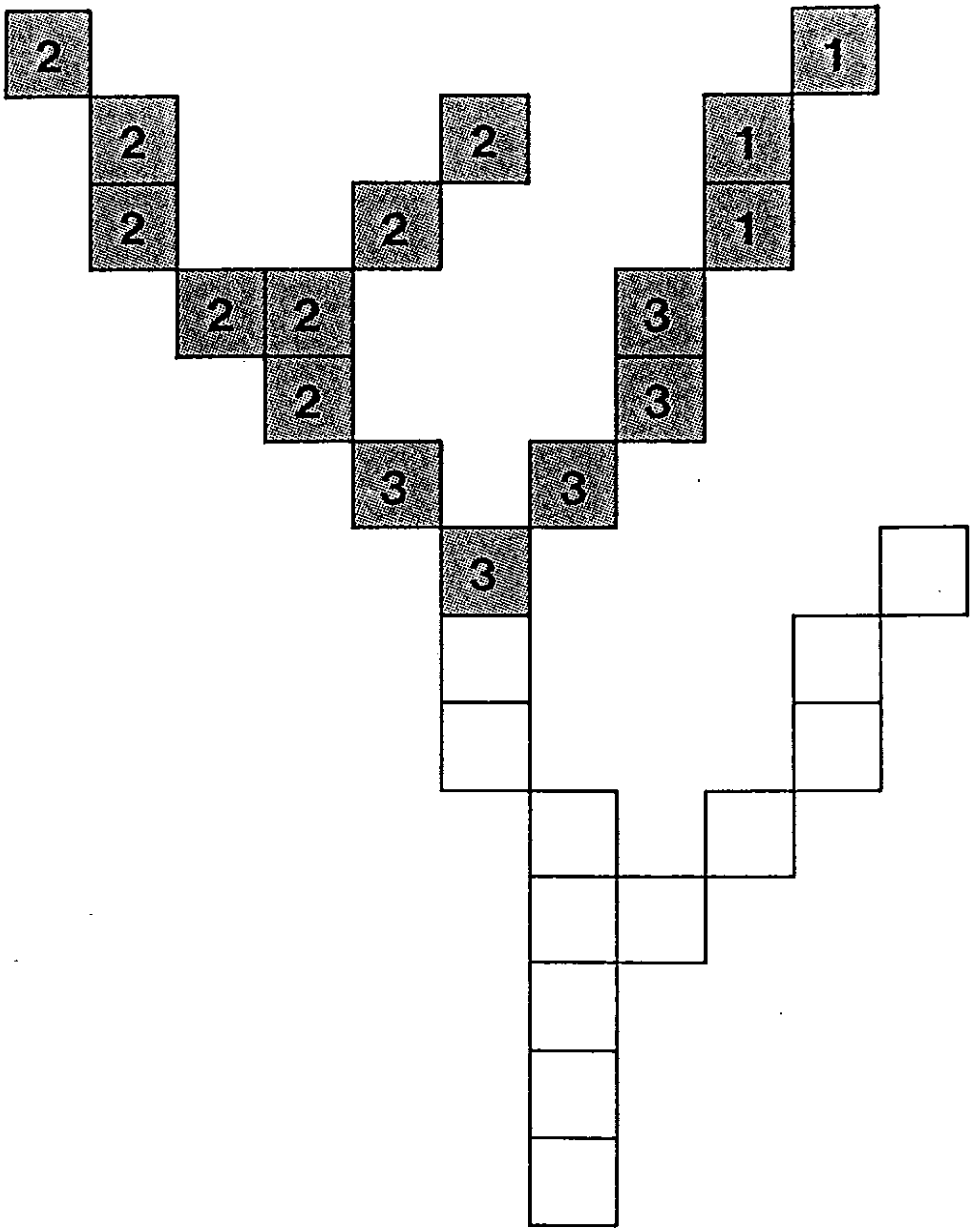

Figure D.5 Cells in River Reach 3

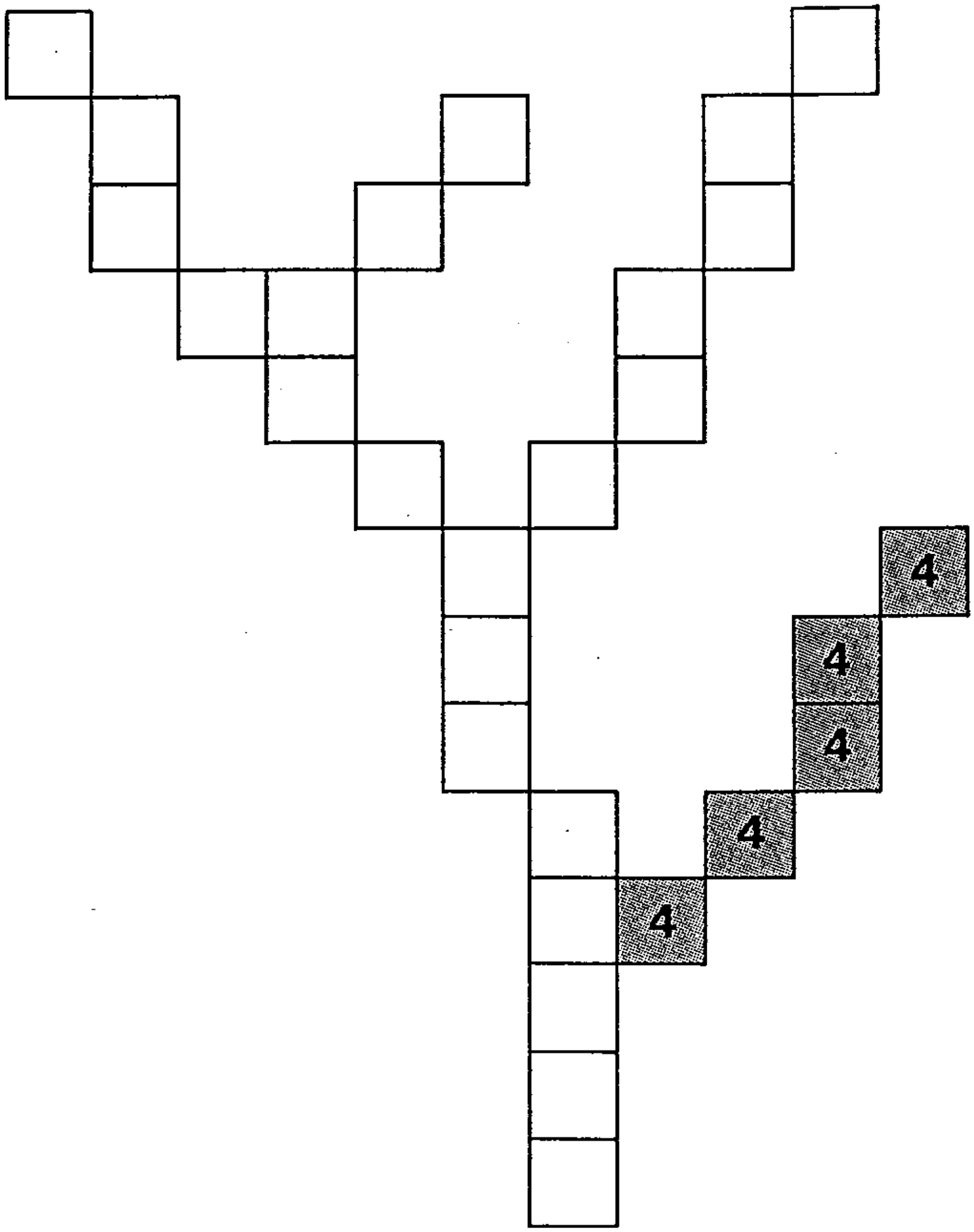

Figure D.6 Cells in River Reach 4

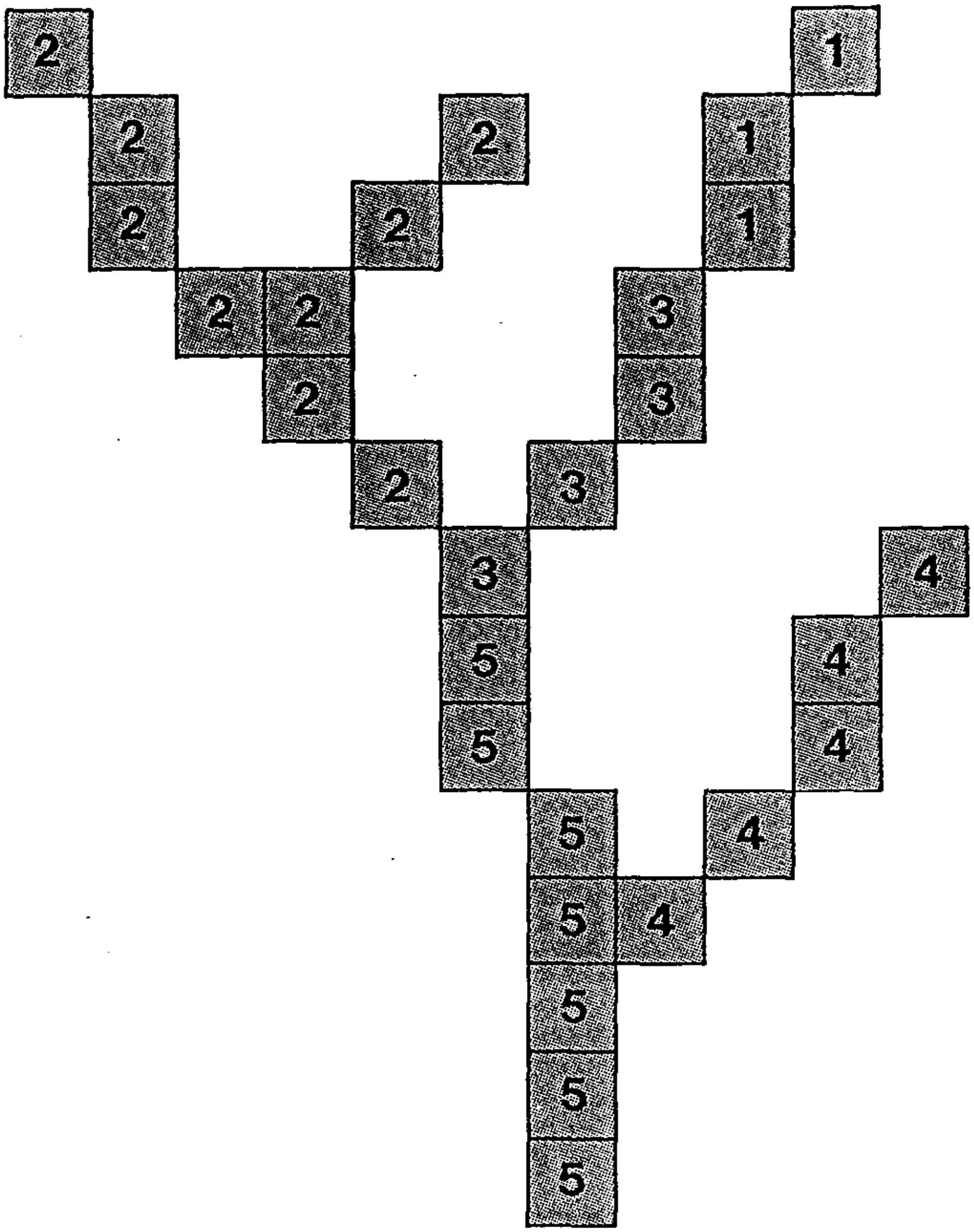

Figure D.7 Cells in River Reach 5

APPENDIX E

Instructions for Creating the File EARMODEL INPUT A

INSTRUCTIONS FOR CREATING THE FILE EARMODEL INPUT A

CARD A. Format ((2x,2A4),I10,4F10.5)

Field 1:	NAMEMO;	Model name (leave blank for default of EARMODEL)
Field 2:	IOTYPE;	Output listing type (IOTYPE=1 means output is a listing with marginal value information, otherwise leave blank)
Field 3:	ALLOWL;	Allowable length tolerance (leave blank for default value of 0.0)
Field 4:	ALLOWV;	Allowable volume tolerance (leave blank for default value of 0.0)
Field 5:	SCFACL;	Scaling factor for length (leave blank for default value of 0.001)
Field 6:	SCFACV;	Scaling factor for volume (leave blank for default value of 0.0001)

CARD B. Format (4I10)

Field 1:	IMAXIM;	Maximum number of rows or maximum I-coordinate number associated with a finite-difference cell
Field 2:	JMAXIM;	Maximum number of columns or maximum J-coordinate number associated with a finite-difference cell
Field 3:	IPOSTP;	Postprocessing indicator (IPOSTP = 1 means the user chooses full postprocessing by GAMSOP, IPOSTP = 2 means the user chooses post-processing for heads only, IPOSTP = 3 means the user chooses post-processing for pumping only, IPOSTP = 4 means the user chooses post-processing for pumping, surface water, and unmet demand; any other value of IPOSTP means no post-processing is intended)
Field 4:	IALLOC;	Allocation model indicator (IALLOC = 1 means that the user chooses to implement the monthly allocation model, otherwise the allocation model is not applied)

CARD C: Format (A4, I4, I3, I2, 2G10.1, I3, 5A4, 2I2, A4, 4A4)

Field 1: VANAME; Variable name of data to be read
(Required entries are:
ATOP for aquifer top
BOTT for aquifer bottom
BOUN for study area boundary indicator
CELO for lower limit on effluent
CEUP for upper limit on effluent
CINF for influent
ELEV for initial head
GPLO for lower limit on groundwater pumping
GWMI for groundwater demand in non-Arkansas

cells that are included in the study area
HYCN for hydraulic conductivity
IRIV for river indicator
OINF for overland inflow
RIVC for river conductance
RIVL for lower limit on recharge for constant head cells
RIVS for river stage
TOPO for topographical top
WADA for agricultural groundwater demand
WADD for deep aquifer water demand
WADS for surface water water demand
WADT total water demand)
(Additional required entries when IALLOC = 1:
MTAD for monthly agricultural water demand for months of April to September
MDAD for monthly deep aquifer demand for months of April to September)

Field 2: INVARI; Indicator flag to select applicable limit equation
(leave blank except for data card for
CEUP when upper limit on effluent is a factor times CELO, INVARI is equal to that factor;
GPLO when lower limit on groundwater pumping is the difference of WADT and WADA, INVARI = 2;
RCHL when lower limit on recharge is a factor times the supplied lower limit, INVARI is equal to that factor)

Field 3: NUFILE; Two digit data file number
(Entry is required only if the user chooses to create the file DATADEFN EXEC A, otherwise leave blank)

Field 4: INFLAG; Indicator flag to identify the type of data
(INFLAG = 0 when constant value is assigned to each cell,
INFLAG = 1 when a distinct value is assigned to each cell and the input file is read rowwise,
INFLAG = 2 when a distinct value is assigned to each cell and the input file is read in the form i j value
INFLAG = 3 when a distinct value is assigned to each cell and the input file is already in the gams table format

Field 5: CVALUE; Value type indicator
(when INFLAG is equal to zero, CVALUE is the constant value assigned to the variable;
when INFLAG is not equal to zero, CVALUE=1.0 means data are integer numbers, otherwise leave blank)

Field 6: CONVER; Conversion factor

(CONVER $\neq$ 0.0 means the real number value is used as the conversion factor, otherwise the default units are used, i.e., ft for length, acre for area, acre-ft for volume and year for time)

Field 7: NLINHR; Number of header lines in the data file (leave blank for default of 8) (Note: Each data file should have at least one header record or line)

Field 8: FRMTIN; Format used to read values (any combination of acceptable FORTRAN format codes)

Field 9: NSDBED; Data's number of significant digits before the decimal point for real number or number of significant digits for integer numbers (default is 2)

Field 10: NSDAFD; Data's number of significant digits after the decimal point (default is 0)

Field 11: DAYEAR; Year of the data (default is blank)

Field 12: VUNITS; Units of the data when CONVER $\neq$ 0.0

(Note: Exactly twenty (20) C-type cards are required when IALLOC = 0, Exactly twenty-two (22) C-type cards are required when IALLOC = 1)

CARD D: Format (2I10)

Field 1: ITNRIV; Total number of river reaches (default value is 25)

Field 2: IRDIND; River data entry indicator (IRDIND = 1 for reading river reach data in E-type card format from file (RREACH DATA A), otherwise leave blank)

CARD E: Format (I3, 25I3)

Field 1: KREACH; River reach number or end of file indicator (KREACH > 0 identifies the river reach number of the river cell)

Field 2 to Field 26: KIRCDE; Integer codes of the river cells in river reach KREACH as established in IRIV data file

(Note: Exactly ITNRIV E-type cards are required)

APPENDIX F

VILMA Session Type V

```
Ready; T=0.01/0.01 10:54:54
vilma

****          HELLO!  YOU HAVE INITIATED YOUR SESSION WITH              ****

*************************************************************************
**                                                                     **
**                               VILMA                                 **
**      (Virtually Interactive Large-scale Model for Arkansas)         **
**             -           -           -           -         -         **
*************************************************************************

****   1. Are you ready to provide the FILENAME, FILETYPE, and FILEMODE
          of each of the required data bank files?
****   2. Are you ready to provide the RECORD LENGTH of these files?
****   3. Have you created the file EARMODEL INPUT A?
****   4. Have you established a PASSWORD for your A disk?
****   5. Have you chosen a NAME for this run?
****   6. Have you called the operator (501-575-2904) to mount RICH01?


** Please enter YES if you answered all six questions affirmatively,
   otherwise please enter NO.
yes
195 replaces F (195)
F (195) R/O




** Please press the RETURN key.



** Please enter YES if you wish to implement the
** monthly allocation model, otherwise enter NO.
yes

** Please be READY TO PROVIDE the FILE NAMES and RECORD LENGTHS of files for:

*  1. AQUIFER TOP                             11. RIVER INDICATOR ARRAY
*
*  2. AQUIFER BOTTOM                          12. OVERLAND INFLOW
*
*  3. BOUNDARY ARRAY                          13. RIVER CONDUCTANCE VALUES
*
*  4. LOWER LIMIT ON EFFLUENT                 14. LOWER LIMIT ON RECHARGE
*
*  5. UPPER LIMIT ON EFFLUENT VALUES              FOR CONSTANT HEAD CELLS
*
*  6. INFLUENT VALUES                         15. RIVER STAGE VALUES
*
*  7. INITIAL HEAD ELEVATION                  16. GROUND ELEVATION
```

```
*
*  8. LOWER LIMIT ON GROUNDWATER PUMPING 17. AGRICULTURAL GROUNDWATER DEMAND
*
*  9. GROUNDWATER DEMAND OF              18. DEEP AQUIFER DEMAND
*
*     NON-ARKANSAS CELLS                 19. SURFACE WATER DEMAND
*
* 10. HYDRAULIC CONDUCTIVITY VALUES      20. TOTAL WATER DEMAND
*
*                                        21. MONTHLY AGRICULTURAL DEMAND
*
*                                        22. MONTHLY DEEP AQUIFER DEMAND
*

** Do you wish to provide the filename and record length
** information by using your own file definition EXEC?

** Please enter YES or NO.
yes


**** You have chosen to provide the filenames and record lengths of
     the required data files by using your own file definition EXEC.


**** Please be reminded that the of name should be DATADEFN EXEC A.

**** Please make sure that DATADEFN EXEC A
**** does not CLEAR filedef nor use numbers 1 through 9.


**** Do you need additional time to prepare DATADEFN EXEC A
**** and wish to resume your VILMA session later?


** Please enter YES or NO.
no
FILEDEF 11 DISK ATOP DATAROW F ( RECFM F LRECL 80
FILEDEF 12 DISK BOTT DATAROW F ( RECFM F LRECL 80
FILEDEF 13 DISK BOUN DATAROW F ( RECFM F LRECL 80
FILEDEF 14 DISK CELO DATAIJ F ( RECFM F LRECL 80
FILEDEF 15 DISK CEUP DATAIJ F ( RECFM F LRECL 80
FILEDEF 16 DISK CINF DATAIJ F ( RECFM F LRECL 80
FILEDEF 17 DISK ELEVCON TABLE F ( RECFM F LRECL 121
FILEDEF 18 DISK GPLO DATAIJ F ( RECFM F LRECL 80
FILEDEF 19 DISK GWMI DATAIJ F ( RECFM F LRECL 80
FILEDEF 20 DISK HYCN DATAROW F ( RECFM F LRECL 80
FILEDEF 21 DISK IRIV DATAIJ F ( RECFM F LRECL 80
FILEDEF 22 DISK OINF DATAIJ F ( RECFM F LRECL 80
FILEDEF 23 DISK RIVCRIVS DATAIJ F ( RECFM F LRECL 81
FILEDEF 24 DISK RCHL DATAIJ F ( RECFM F LRECL 80
FILEDEF 25 DISK RIVCRIVS DATAIJ F ( RECFM F LRECL 81
FILEDEF 26 DISK TOPO DATAROW F ( RECFM F LRECL 80
FILEDEF 27 DISK CON1990 DATAIJ F ( RECFM F LRECL 96
```

```
FILEDEF 28 DISK MDEEP DATAIJ F ( RECFM F LRECL 96
FILEDEF 29 DISK WADS DATAIJ F ( RECFM F LRECL 80
FILEDEF 30 DISK CON1990 DATAIJ F ( RECFM F LRECL 96
FILEDEF 31 DISK CON1990 DATAIJ F ( RECFM F LRECL 96
FILEDEF 32 DISK MDEEP DATAIJ F ( RECFM F LRECL 96


** Please enter the NAME OF THIS RUN.
cma1990


** PLEASE WAIT .......
Please enter the read password for your A-disk.
rc
Enter your LOGON password:

PUN FILE 6903  TO  BATCHMON COPY 001   NOHOLD



**** YOU HAVE JUST COMPLETED A SESSION WITH VILMA


**** The optimization model CMA1990
     has been submitted as a batch job, class R.
**** Please call the machine room operator at 575-2904 at the
     University of Arkansas and request that BATCH-6 be released.
**** Issue the command BSTATUS to verify that the job has started.
**** Receive the results from the reader after job completion
     (runs for the Eastern Arkansas Comprehensive Study area
     usually get completed after 2 to 3 hours.)


**** HAVE A GOOD DAY! ****
****      BYE        ****


Ready; T=13.60/14.31 10:56:23
```

APPENDIX G

VILMA Session Type VII

```
Ready; T=0.01/0.01 11:19:37
vilma

****          HELLO!  YOU HAVE INITIATED YOUR SESSION WITH           ****

*************************************************************************
**                                                                     **
**                              VILMA                                  **
**       (Virtually Interactive Large-scale Model for Arkansas)        **
**          -         -          -          -         -                **
*************************************************************************

****  1. Are you ready to provide the FILENAME, FILETYPE, and FILEMODE
         of each of the required data bank files?
****  2. Are you ready to provide the RECORD LENGTH of these files?
****  3. Have you created the file EARMODEL INPUT A?
****  4. Have you established a PASSWORD for your A disk?
****  5. Have you chosen a NAME for this run?
****  6. Have you called the operator (501-575-2904) to mount RICH01?


** Please enter YES if you answered all six questions affirmatively,
   otherwise please enter NO.
yes
195 replaces F (195)
F (195) R/O



** Please press the RETURN key.



** Please enter YES if you wish to implement the
** monthly allocation model, otherwise enter NO.
yes

** Please be READY TO PROVIDE the FILE NAMES and RECORD LENGTHS of files for:

*  1. AQUIFER TOP                             11. RIVER INDICATOR ARRAY
*
*  2. AQUIFER BOTTOM                          12. OVERLAND INFLOW
*
*  3. BOUNDARY ARRAY                          13. RIVER CONDUCTANCE VALUES
*
*  4. LOWER LIMIT ON EFFLUENT                 14. LOWER LIMIT ON RECHARGE
*
*  5. UPPER LIMIT ON EFFLUENT VALUES              FOR CONSTANT HEAD CELLS
*
*  6. INFLUENT VALUES                         15. RIVER STAGE VALUES
*
*  7. INITIAL HEAD ELEVATION                  16. GROUND ELEVATION
```

```
*
*   8. LOWER LIMIT ON GROUNDWATER PUMPING 17. AGRICULTURAL GROUNDWATER DEMAND
*
*   9. GROUNDWATER DEMAND OF              18. DEEP AQUIFER DEMAND
*
*      NON-ARKANSAS CELLS                 19. SURFACE WATER DEMAND
*
*  10. HYDRAULIC CONDUCTIVITY VALUES      20. TOTAL WATER DEMAND
*
*                                         21. MONTHLY AGRICULTURAL DEMAND
*
*                                         22. MONTHLY DEEP AQUIFER DEMAND
*

** Do you wish to provide the filename and record length
** information by using your own file definition EXEC?

** Please enter YES or NO.
no


** You have chosen to provide the filenames and record lengths of
   of the required data files INTERACTIVELY.


** Please enter GO if you are ready and wish to continue,
   otherwise enter STOP.
go
Please enter YES if you wish to implement the
monthly allocation model, otherwise enter NO.
yes


** Please enter the filename, filetype, and filemode of the
   data file for the AQUIFER TOP
   (fn ft fm, e.g., top data a).
atop datarow f
** What is the record length of file ATOP DATAROW F ?
80
** You have entered the following information:
   The record length of file  ATOP DATAROW F is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the AQUIFER BOTTOM
   (fn ft fm, e.g., bot data a).
bott datarow f
** What is the record length of file BOTT DATAROW F ?
80
** You have entered the following information:
   The record length of file  BOTT DATAROW F is 80 .
```

```
** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the BOUNDARY ARRAY
   (fn ft fm, e.g., bound data a).
boun datarow f

** What is the record length of file BOUN DATAROW F ?
80

** You have entered the following information:
   The record length of file  BOUN DATAROW F is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the LOWER LIMIT ON EFFLUENT
   (fn ft fm, e.g., celow data a).
celo dataij f

** What is the record length of file CELO DATAIJ F ?
80

** You have entered the following information:
   The record length of file  CELO DATAIJ F is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the UPPER LIMIT ON EFFLUENT
   (fn ft fm, e.g., ceup data a).
ceup dataij f

** What is the record length of file CEUP DATAIJ F  ?
80

** You have entered the following information:
   The record length of file  CEUP DATAIJ F  is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the INFLUENT VALUES
   (fn ft fm, e.g., influent data a).
```

```
cinf dataij f
** What is the record length of file CINF DATAIJ F  ?
80
** You have entered the following information:
   The record length of file  CINF DATAIJ F  is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the INITIAL HEAD ELEVATION
   (fn ft fm, e.g., inithead data a).
elevcon table f
** What is the record length of file ELEVCON TABLE F  ?
121
** You have entered the following information:
   The record length of file  ELEVCON TABLE F  is 121 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the LOWER LIMIT ON GROUNDWATER PUMPING
   (fn ft fm, e.g., gplower data a).
gplo dataij f
** What is the record length of file GPLO DATAIJ F ?
80
** You have entered the following information:
   The record length of file  GPLO DATAIJ F is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the GROUNDWATER DEMAND OF NON-ARKANSAS CELLS
   (fn ft fm, e.g., nonargw data a).
gwmi dataij f
** What is the record length of file GWMI DATAIJ F ?
80
** You have entered the following information:
   The record length of file  GWMI DATAIJ F is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
```

```
no

** Please enter the filename, filetype, and filemode of the
   data file for the HYDRAULIC CONDUCTIVITY VALUES
   (fn ft fm, e.g., hycon data a).
hycn datarow f
** What is the record length of file HYCN DATAROW F ?
80
** You have entered the following information:
   The record length of file  HYCN DATAROW F is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the RIVER INDICATOR ARRAY
   (fn ft fm, e.g., ir data a).
iriv dataij f
** What is the record length of file IRIV DATAIJ F  ?
80
** You have entered the following information:
   The record length of file  IRIV DATAIJ F  is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the OVERLAND INFLOW
   (fn ft fm, e.g., oi data a).
oinf dataij f
** What is the record length of file OINF DATAIJ F  ?
80
** You have entered the following information:
   The record length of file  OINF DATAIJ F  is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the RIVER CONDUCTANCE VALUES
   (fn ft fm, e.g., rc data a).
rivcrivs dataij f
** What is the record length of file RIVCRIVS DATAIJ F  ?
```

```
81
** You have entered the following information:
   The record length of file  RIVCRIVS DATAIJ F  is 81 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
rchl dataij f
** Please enter the filename, filetype, and filemode of the
   data file for the RIVER CONDUCTANCE VALUES
   (fn ft fm, e.g., rc data a).
80
** What is the record length of file 80   ?

** You have entered the following information:
   The record length of file  80   is  .

** Please enter YES if you need to make changes,
** otherwise enter NO.
yes
** Please enter the filename, filetype, and filemode of the
   data file for the RIVER CONDUCTANCE VALUES
   (fn ft fm, e.g., rc data a).
rivcrivs dataij f
** What is the record length of file RIVCRIVS DATAIJ F ?
81
** You have entered the following information:
   The record length of file  RIVCRIVS DATAIJ F is 81 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the LOWER LIMIT ON RECHARGE FOR CONSTANT HEAD CELLS
   (fn ft fm, e.g., rchmin data a).
rchl dataij f
** What is the record length of file RCHL DATAIJ F ?
80
** You have entered the following information:
   The record length of file  RCHL DATAIJ F is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the RIVER STAGE VALUES
   (fn ft fm, e.g., rs data a).
```

```
rivcrivs dataij f
** What is the record length of file RIVCRIVS DATAIJ F ?
81
** You have entered the following information:
   The record length of file  RIVCRIVS DATAIJ F is 81 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the GROUND ELEVATION
   (fn ft fm, e.g., topo data a).
topo datarow f
** What is the record length of file TOPO DATAROW F ?
80
** You have entered the following information:
   The record length of file  TOPO DATAROW F is 80 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the AGRICULTURAL GROUNDWATER DEMAND
   (fn ft fm, e.g., wada data a).
con1990 dataij f
** What is the record length of file CON1990 DATAIJ F ?
96
** You have entered the following information:
   The record length of file  CON1990 DATAIJ F is 96 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no


** Please enter the filename, filetype, and filemode of the
   data file for the DEEP AQUIFER DEMAND
   (fn ft fm, e.g., deepaqui data a).
mdeep dataij f
** What is the record length of file MDEEP DATAIJ F ?
96
** You have entered the following information:
   The record length of file  MDEEP DATAIJ F is 96 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
```

```
mdeep dataij f
** What is the record length of file MDEEP DATAIJ F ?
96
** You have entered the following information:
   The record length of file  MDEEP DATAIJ F is 96 .

** Please enter YES if you need to make changes,
** otherwise enter NO.
no




** Please enter the NAME OF THIS RUN.
cma1990


** PLEASE WAIT .......
Please enter the read password for your A-disk.
rc
Enter your LOGON password:

PUN FILE 6915  TO  BATCHMON COPY 001   NOHOLD



**** YOU HAVE JUST COMPLETED A SESSION WITH VILMA


**** The optimization model CMA1990
     has been submitted as a batch job, class R.
**** Please call the machine room operator at 575-2904 at the
     University of Arkansas and request that BATCH-6 be released.
**** Issue the command BSTATUS to verify that the job has started.
**** Receive the results from the reader after job completion
     (runs for the Eastern Arkansas Comprehensive Study area
     usually get completed after 2 to 3 hours.)


**** HAVE A GOOD DAY! ****
****       BYE       ****


Ready; T=13.59/15.08 11:16:55
```

APPENDIX H

GAMS File Created by a VILMA Session
(CMA1990 GAMS A)

```
$TITLE EASTERN ARKANSAS COMPREHENSIVE STUDY AREA (MODEL CMA1990 )
*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*
*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                                          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&              VILMA'S GAMS MODEL          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                                          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&              CODED AND TESTED            &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                     BY                   &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&              R. R. A. CANTILLER          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                                          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&           UNDER THE SUPERVISION OF       &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                R. C. PERALTA             &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                                          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&  WATER RESOURCES MANAGEMENT LABORATORY   &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&   AGRICULTURAL ENGINEERING DEPARTMENT    &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&         UNIVERSITY OF ARKANSAS           &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&      FAYETTEVILLE, ARKANSAS 72701        &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&        TELEPHONE: (501) 575-2848         &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                                          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                  FOR THE                 &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&       U. S. ARMY CORPS OF ENGINEERS      &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                                          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                    AND                   &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                                          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&          U. S. GEOLOGICAL SURVEY         &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&           LITTLE ROCK, ARKANSAS          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&                                          &&&&&&&&&&&&&&*
*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*
*&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&*

 OPTION RESLIM   = 10000000;
 OPTION ITERLIM  = 10000000;
 OPTION LIMROW   = 0;
 OPTION LIMCOL   = 0;
 OPTION SYSOUT   = OFF;
 OPTION SOLPRINT = OFF;

 SET I   STUDY AREA ROWS      /1*66/
     J   STUDY AREA COLUMNS   /1*52/
     K   RIVER REACH NUMBER   /1*16/

 ALIAS (I,IL), (J,JL), (K,KK,KL);

 SCALAR  ALLOWL  LENGTH ALLOWANCE                      /   0.0    /
         ALLOWV  VOLUME ALLOWANCE                      /   0.0    /
         SCFACL  SCALING FACTOR FOR LENGTH             /   0.00100/
         SCFACV  SCALING FACTOR FOR VOLUME             /   0.00010/
         RCFAC   FACTOR FOR USGS-SUPPLIED RECHARGE     /         2/
 SCALAR  CFATOP  CONVERSION FACTOR FROM FT                TO FT                  /   1.0000/
         CFBOTT  CONVERSION FACTOR FROM FT                TO FT                  /   1.0000/
         CFCELD  CONVERSION FACTOR FROM CUBIC FT PER SEC  TO ACRE-FT PER YEAR    / 724.4628/
         CFCINF  CONVERSION FACTOR FROM CUBIC FT PER SEC  TO ACRE-FT PER YEAR    / 724.4628/
         CFELEV  CONVERSION FACTOR FROM FT                TO FT                  /   1.0000/
         CFGWMI  CONVERSION FACTOR FROM MGD               TO ACRE-FT PER YEAR    /1121.1999/
         CFHYCN  CONVERSION FACTOR FROM FT PER DAY        TO ACRE PER FT PER YEAR /  0.0084/
         CFDINF  CONVERSION FACTOR FROM CUBIC FT PER SEC  TO ACRE-FT PER YEAR    / 724.4628/
         CFRIVC  CONVERSION FACTOR FROM FT**2 PER DAY     TO ACRE PER YEAR       /   0.0084/
         CFRCHL  CONVERSION FACTOR FROM CUBIC FT PER DAY  TO ACRE-FT PER YEAR    /   0.0084/
         CFRIVS  CONVERSION FACTOR FROM FT                TO FT                  /   1.0000/
         CFTOPO  CONVERSION FACTOR FROM FT                TO FT                  /   1.0000/
         CFWADA  CONVERSION FACTOR FROM ACRE-FT PER YEAR  TO ACRE-FT PER YEAR    /   1.0000/
         CFWADD  CONVERSION FACTOR FROM ACRE-FT PER YEAR  TO ACRE-FT PER YEAR    /   1.0000/
         CFWADS  CONVERSION FACTOR FROM ACRE-FT PER YEAR  TO ACRE-FT PER YEAR    /   1.0000/
         CFWADT  CONVERSION FACTOR FROM ACRE-FT PER YEAR  TO ACRE-FT PER YEAR    /   1.0000/

 PARAMETER IRCODE(K)  RIVER CELL CODE INDICATOR

         / 1           1
           2           2
           3           3
           4           4
           5           5
           6           6
           7           7
           8           8
           9           9
          10          10
          11          11
          12          12
          13          13
          14          14
          15          15
          16          16/

 TABLE  IRKC(K,KK)  RIVER CODES FOR REACH K

        1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16
    1   1   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    2   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    3   3   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    4   4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    5   5   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    6   6   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    7   1   7   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    8   6   8   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    9   2   3   6   8   9   0   0   0   0   0   0   0   0   0   0   0
   10  10   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   11   5  10  11   0   0   0   0   0   0   0   0   0   0   0   0   0
   12   5  10  11  12   0   0   0   0   0   0   0   0   0   0   0   0
   13   4   5  10  11  12  13   0   0   0   0   0   0   0   0   0   0
```

14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	4	5	10	11	12	13	14	15	0	0	0	0	0	0	0	0
16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

TABLE ATOP(I,J) AQUIFER TOP IN FT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	213.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	222.0	213.0	209.0	209.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	211.0	204.0	197.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	207.0	202.0	189.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	203.0	188.0
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	184.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	178.0	183.0
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	172.0	185.0
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	171.0	175.0	190.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	188.0	175.0	187.0	203.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	218.0	199.0	182.0	184.0	206.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	193.0	190.0	181.0	180.0	172.0	194.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	203.0	194.0	184.0	177.0	180.0	185.0	178.0	192.0
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	204.0	195.0	181.0	187.0	187.0	183.0	174.0	177.0	180.0	195.0
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	198.0	195.0	181.0	178.0	180.0	182.0	175.0	173.0	160.0	182.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	197.0	181.0	175.0	177.0	179.0	171.0	184.0	155.0	163.0	172.0
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	182.0	184.0	181.0	185.0	178.0	187.0	153.0	160.0	158.0	165.0	163.0
38	0.0	0.0	0.0	0.0	0.0	0.0	183.0	189.0	183.0	189.0	187.0	178.0	170.0	171.0	156.0	159.0	170.0	160.0
39	0.0	0.0	0.0	0.0	0.0	217.0	169.0	163.0	181.0	202.0	186.0	168.0	172.0	167.0	159.0	161.0	173.0	158.0
40	0.0	0.0	0.0	0.0	222.0	212.0	185.0	182.0	168.0	191.0	188.0	170.0	155.0	150.0	148.0	165.0	179.0	156.0
41	0.0	0.0	0.0	0.0	200.0	202.0	197.0	185.0	174.0	172.0	171.0	160.0	153.0	158.0	144.0	164.0	169.0	163.0
42	0.0	0.0	220.0	212.0	218.0	221.0	194.0	177.0	172.0	186.0	165.0	164.0	155.0	165.0	151.0	149.0	154.0	155.0
43	0.0	233.0	231.0	230.0	211.0	198.0	198.0	198.0	173.0	160.0	157.0	153.0	159.0	158.0	155.0	143.0	140.0	125.0
44	0.0	231.0	232.0	228.0	220.0	218.0	192.0	188.0	192.0	187.0	173.0	168.0	160.0	162.0	148.0	142.0	141.0	130.0
45	0.0	0.0	230.0	225.0	220.0	204.0	199.0	192.0	183.0	179.0	174.0	168.0	152.0	153.0	145.0	140.0	146.0	144.0
46	0.0	0.0	226.0	218.0	208.0	198.0	181.0	188.0	180.0	183.0	170.0	171.0	164.0	169.0	140.0	137.0	134.0	127.0
47	0.0	0.0	220.0	211.0	204.0	191.0	196.0	194.0	182.0	176.0	176.0	183.0	184.0	145.0	135.0	138.0	138.0	135.0
48	0.0	0.0	0.0	215.0	208.0	198.0	199.0	189.0	180.0	174.0	170.0	168.0	178.0	151.0	145.0	139.0	148.0	146.0
49	0.0	0.0	0.0	206.0	201.0	198.0	183.0	189.0	180.0	175.0	174.0	167.0	169.0	166.0	154.0	145.0	142.0	151.0
50	0.0	0.0	0.0	204.0	200.0	201.0	188.0	188.0	179.0	173.0	161.0	165.0	157.0	149.0	139.0	135.0	136.0	143.0
51	0.0	0.0	0.0	195.0	188.0	188.0	190.0	185.0	188.0	172.0	162.0	164.0	168.0	160.0	140.0	129.0	129.0	131.0
52	0.0	0.0	0.0	0.0	164.0	190.0	191.0	187.0	177.0	171.0	167.0	162.0	170.0	163.0	158.0	138.0	127.0	130.0
53	0.0	0.0	0.0	0.0	180.0	181.0	177.0	174.0	173.0	172.0	169.0	183.0	180.0	150.0	144.0	148.0	132.0	124.0
54	0.0	0.0	0.0	0.0	0.0	175.0	179.0	173.0	178.0	171.0	161.0	165.0	166.0	148.0	137.0	154.0	124.0	128.0
55	0.0	0.0	0.0	0.0	0.0	0.0	191.0	182.0	184.0	178.0	164.0	157.0	160.0	152.0	138.0	144.0	119.0	130.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	187.0	179.0	171.0	162.0	158.0	122.0	134.0	131.0	122.0	145.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	173.0	159.0	155.0	133.0	126.0	150.0	135.0	124.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	148.0	141.0	135.0	144.0	138.0	129.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	140.0	146.0	150.0	141.0	123.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	140.0	125.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	135.0

+	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	288.0	288.0	281.0	273.0	288.0	299.0	295.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	281.0	278.0	263.0	286.0	284.0	298.0	297.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	269.0	281.0	274.0	272.0	280.0	279.0	287.0	283.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	270.0	278.0	270.0	267.0	281.0	274.0	279.0	288.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	261.0	272.0	287.0	275.0	277.0	277.0	280.0	279.0	282.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	262.0	271.0	274.0	259.0	270.0	274.0	275.0	270.0	272.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	260.0	262.0	264.0	263.0	265.0	274.0	275.0	273.0	275.0	264.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	255.0	258.0	262.0	264.0	265.0	268.0	268.0	272.0	273.0	255.0	235.0
9	0.0	0.0	0.0	0.0	0.0	0.0	253.0	257.0	260.0	262.0	261.0	248.0	261.0	253.0	251.0	265.0	247.0	224.0
10	0.0	0.0	0.0	0.0	0.0	254.0	250.0	259.0	266.0	259.0	252.0	253.0	252.0	253.0	248.0	227.0	203.0	223.0
11	0.0	0.0	0.0	0.0	0.0	255.0	252.0	258.0	250.0	243.0	234.0	236.0	241.0	247.0	238.0	220.0	199.0	203.0
12	0.0	0.0	0.0	0.0	259.0	259.0	263.0	254.0	249.0	225.0	223.0	239.0	243.0	242.0	232.0	228.0	207.0	191.0
13	0.0	0.0	0.0	0.0	239.0	247.0	251.0	251.0	245.0	222.0	234.0	244.0	246.0	245.0	228.0	207.0	178.0	174.0
14	0.0	0.0	0.0	242.0	242.0	248.0	251.0	248.0	237.0	228.0	225.0	254.0	261.0	255.0	253.0	204.0	211.0	219.0
15	0.0	0.0	231.0	238.0	246.0	243.0	245.0	243.0	241.0	235.0	228.0	265.0	264.0	252.0	248.0	221.0	227.0	230.0
16	0.0	238.0	225.0	234.0	238.0	239.0	237.0	239.0	232.0	220.0	227.0	240.0	241.0	236.0	233.0	223.0	223.0	231.0
17	0.0	228.0	221.0	231.0	235.0	226.0	229.0	232.0	229.0	229.0	234.0	234.0	230.0	229.0	226.0	221.0	220.0	230.0
18	0.0	214.0	226.0	237.0	234.0	226.0	228.0	223.0	231.0	240.0	231.0	230.0	231.0	218.0	214.0	218.0	220.0	227.0
19	209.0	214.0	231.0	236.0	233.0	228.0	217.0	225.0	225.0	224.0	219.0	222.0	225.0	214.0	215.0	207.0	212.0	222.0
20	216.0	223.0	229.0	230.0	227.0	222.0	216.0	217.0	215.0	225.0	219.0	216.0	219.0	210.0	205.0	203.0	206.0	214.0
21	219.0	226.0	228.0	228.0	223.0	217.0	217.0	211.0	214.0	222.0	219.0	223.0	217.0	206.0	207.0	203.0	202.0	209.0
22	217.0	221.0	223.0	223.0	217.0	220.0	220.0	214.0	231.0	232.0	228.0	225.0	210.0	207.0	210.0	214.0	211.0	208.0
23	208.0	216.0	221.0	217.0	212.0	221.0	223.0	220.0	229.0	231.0	225.0	222.0	209.0	203.0	206.0	209.0	206.0	202.0
24	191.0	211.0	218.0	211.0	210.0	218.0	218.0	225.0	229.0	228.0	224.0	225.0	208.0	201.0	202.0	203.0	198.0	197.0
25	191.0	205.0	210.0	203.0	210.0	215.0	217.0	222.0	225.0	226.0	224.0	221.0	203.0	197.0	199.0	202.0	197.0	196.0
26	186.0	206.0	213.0	206.0	199.0	208.0	211.0	219.0	223.0	224.0	215.0	210.0	202.0	197.0	198.0	195.0	197.0	194.0
27	183.0	201.0	207.0	201.0	200.0	207.0	213.0	217.0	221.0	219.0	215.0	214.0	206.0	194.0	192.0	193.0	195.0	196.0
28	197.0	207.0	200.0	198.0	204.0	205.0	210.0	208.0	214.0	214.0	206.0	212.0	199.0	189.0	192.0	185.0	189.0	195.0
29	205.0	202.0	199.0	191.0	197.0	203.0	211.0	206.0	210.0	198.0	208.0	200.0	188.0	183.0	183.0	188.0	187.0	188.0
30	206.0	207.0	197.0	183.0	185.0	205.0	207.0	202.0	195.0	200.0	215.0	185.0	183.0	181.0	173.0	182.0	197.0	181.0
31	211.0	205.0	202.0	198.0	197.0	204.0	202.0	200.0	202.0	205.0	209.0	191.0	188.0	177.0	187.0	184.0	177.0	191.0
32	201.0	193.0	198.0	194.0	195.0	201.0	192.0	184.0	198.0	201.0	203.0	178.0	188.0	188.0	195.0	190.0	183.0	193.0
33	192.0	188.0	194.0	191.0	198.0	198.0	195.0	190.0	195.0	192.0	216.0	201.0	190.0	185.0	190.0	188.0	182.0	182.0
34	198.0	192.0	188.0	190.0	191.0	195.0	184.0	190.0	193.0	184.0	200.0	199.0	190.0	187.0	175.0	186.0	187.0	181.0
35	188.0	172.0	175.0	180.0	187.0	188.0	184.0	183.0	190.0	192.0	193.0	195.0	191.0	182.0	188.0	182.0	166.0	177.0
36	169.0	178.0	184.0	182.0	191.0	182.0	190.0	182.0	187.0	186.0	204.0	200.0	189.0	177.0	178.0	172.0	176.0	175.0
37	173.0	184.0	184.0	182.0	186.0	189.0	187.0	184.0	188.0	191.0	229.0	202.0	190.0	183.0	187.0	179.0	177.0	168.0
38	178.0	180.0	172.0	183.0	183.0	185.0	184.0	186.0	188.0	186.0	197.0	190.0	174.0	176.0	174.0	183.0	178.0	179.0
39	163.0	171.0	166.0	170.0	177.0	177.0	180.0	184.0	185.0	180.0	183.0	218.0	176.0	172.0	182.0	178.0	185.0	189.0
40	154.0	158.0	164.0	163.0	168.0	180.0	182.0	179.0	184.0	167.0	184.0	194.0	175.0	175.0	182.0	175.0	165.0	190.0
41	153.0	152.0	166.0	163.0	159.0	172.0	171.0	177.0	174.0	174.0	165.0	169.0	168.0	174.0	164.0	164.0	172.0	184.0
42	156.0	159.0	167.0	163.0	153.0	162.0	172.0	180.0	175.0	174.0	175.0	162.0	167.0	168.0	170.0	161.0	161.0	0.0
43	148.0	167.0	167.0	164.0	158.0	154.0	154.0	172.0	178.0	173.0	169.0	168.0	167.0	165.0	178.0	177.0	159.0	0.0
44	154.0	158.0	167.0	167.0	162.0	154.0	140.0	158.0	172.0	172.0	156.0	168.0	173.0	177.0	183.0	0.0	178.0	0.0
45	145.0	158.0	165.0	164.0	164.0	157.0	140.0	155.0	163.0	169.0	184.0	161.0	162.0	173.0	181.0	0.0	0.0	0.0
46	121.0	154.0	164.0	165.0	165.0	158.0	150.0	157.0	160.0	164.0	159.0	163.0	170.0	181.0	198.0	0.0	0.0	0.0
47	126.0	145.0	164.0	162.0	160.0	160.0	163.0	160.0	152.0	142.0	154.0	158.0	169.0	208.0	213.0	0.0	0.0	0.0
48	140.0	128.0	154.0	161.0	159.0	162.0	163.0	168.0	165.0	144.0	151.0	155.0	181.0	215.0	189.0	176.0	0.0	0.0
49	159.0	123.0	132.0	154.0	154.0	158.0	155.0	168.0	158.0	152.0	154.0	154.0	161.0	154.0	154.0	0.0	0.0	0.0
50	138.0	132.0	128.0	145.0	149.0	149.0	151.0	151.0	144.0	150.0	151.0	155.0	161.0	156.0	151.0	0.0	0.0	0.0

51	136.0	128.0	143.0	143.0	143.0	145.0	148.0	145.0	147.0	151.0	152.0	154.0	158.0	157.0	154.0	0.0	0.0	0.0
52	137.0	114.0	130.0	132.0	140.0	143.0	142.0	143.0	147.0	150.0	158.0	157.0	150.0	148.0	0.0	0.0	0.0	0.0
53	126.0	128.0	130.0	135.0	145.0	145.0	147.0	142.0	141.0	147.0	139.0	148.0	0.0	0.0	0.0	0.0	0.0	0.0
54	134.0	130.0	121.0	141.0	138.0	142.0	147.0	143.0	143.0	134.0	118.0	138.0	0.0	0.0	0.0	0.0	0.0	0.0
55	131.0	127.0	126.0	138.0	138.0	139.0	142.0	145.0	146.0	134.0	120.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	125.0	117.0	123.0	128.0	131.0	135.0	138.0	135.0	135.0	135.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	123.0	114.0	118.0	112.0	117.0	131.0	137.0	138.0	131.0	131.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	123.0	119.0	122.0	108.0	110.0	127.0	138.0	139.0	135.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	123.0	119.0	119.0	114.0	114.0	125.0	137.0	138.0	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	120.0	115.0	112.0	110.0	109.0	124.0	135.0	138.0	135.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	126.0	115.0	105.0	109.0	113.0	121.0	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	116.0	119.0	119.0	124.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	117.0	113.0	110.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	102.0	101.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	104.0	103.0	103.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	114.0	111.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
1	283.0	277.0	283.0	281.0	286.0	281.0	281.0	279.0	273.0	266.0	262.0	253.0	267.0	270.0	278.0	0.0
2	294.0	288.0	288.0	288.0	282.0	276.0	277.0	274.0	267.0	260.0	257.0	256.0	259.0	266.0	272.0	0.0
3	297.0	296.0	287.0	281.0	273.0	265.0	268.0	253.0	256.0	254.0	253.0	252.0	254.0	259.0	265.0	0.0
4	284.0	282.0	281.0	276.0	267.0	251.0	235.0	240.0	250.0	249.0	248.0	249.0	250.0	253.0	259.0	0.0
5	282.0	278.0	273.0	270.0	284.0	251.0	238.0	240.0	246.0	248.0	246.0	247.0	249.0	251.0	257.0	0.0
6	288.0	280.0	283.0	282.0	282.0	258.0	248.0	248.0	246.0	249.0	250.0	251.0	253.0	257.0	259.0	0.0
7	247.0	251.0	254.0	258.0	263.0	280.0	252.0	248.0	247.0	250.0	250.0	250.0	253.0	256.0	259.0	0.0
8	225.0	250.0	252.0	255.0	260.0	261.0	251.0	246.0	247.0	250.0	248.0	246.0	252.0	266.0	256.0	0.0
9	194.0	245.0	248.0	250.0	255.0	259.0	248.0	240.0	242.0	244.0	243.0	246.0	251.0	0.0	0.0	0.0
10	218.0	240.0	244.0	246.0	248.0	248.0	243.0	238.0	236.0	239.0	242.0	244.0	248.0	247.0	0.0	0.0
11	234.0	239.0	241.0	243.0	242.0	238.0	237.0	238.0	237.0	240.0	239.0	238.0	240.0	242.0	0.0	0.0
12	220.0	232.0	236.0	238.0	237.0	234.0	232.0	232.0	236.0	244.0	229.0	231.0	232.0	235.0	0.0	0.0
13	197.0	215.0	228.0	234.0	234.0	232.0	227.0	224.0	228.0	228.0	224.0	228.0	228.0	0.0	0.0	0.0
14	216.0	222.0	226.0	231.0	230.0	227.0	222.0	217.0	218.0	227.0	234.0	231.0	0.0	0.0	0.0	0.0
15	233.0	226.0	225.0	228.0	228.0	220.0	220.0	219.0	217.0	228.0	238.0	238.0	235.0	0.0	0.0	0.0
16	234.0	228.0	225.0	227.0	224.0	214.0	214.0	217.0	220.0	230.0	235.0	237.0	235.0	234.0	0.0	0.0
17	231.0	230.0	229.0	226.0	221.0	210.0	210.0	209.0	215.0	225.0	231.0	232.0	0.0	0.0	0.0	0.0
18	230.0	232.0	231.0	229.0	219.0	211.0	212.0	208.0	218.0	218.0	211.0	218.0	221.0	0.0	0.0	0.0
19	225.0	227.0	229.0	236.0	226.0	208.0	208.0	210.0	222.0	211.0	202.0	204.0	0.0	0.0	0.0	0.0
20	218.0	217.0	219.0	231.0	239.0	205.0	204.0	207.0	208.0	213.0	204.0	0.0	0.0	0.0	0.0	0.0
21	213.0	211.0	212.0	215.0	201.0	199.0	201.0	206.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	209.0	208.0	205.0	197.0	194.0	188.0	210.0	210.0	211.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	201.0	197.0	208.0	197.0	193.0	203.0	218.0	217.0	217.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	202.0	202.0	198.0	196.0	202.0	208.0	206.0	202.0	211.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	199.0	202.0	188.0	194.0	199.0	211.0	205.0	198.0	202.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	196.0	204.0	205.0	204.0	212.0	209.0	208.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	202.0	207.0	202.0	198.0	207.0	209.0	208.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	185.0	203.0	188.0	213.0	214.0	218.0	215.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	191.0	191.0	205.0	215.0	212.0	211.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	197.0	197.0	205.0	206.0	205.0	213.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	186.0	185.0	207.0	184.0	189.0	204.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	180.0	183.0	195.0	190.0	194.0	195.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	167.0	179.0	181.0	182.0	195.0	197.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	169.0	189.0	174.0	177.0	201.0	198.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	169.0	169.0	180.0	174.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	176.0	191.0	180.0	182.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	166.0	180.0	174.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	172.0	171.0	168.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	154.0	156.0	158.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	158.0	157.0	168.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	172.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE BOTT(I,J) AQUIFER BOTTOM IN FT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	191.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	141.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	146.0	134.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	151.0	141.0	127.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	121.0	141.0	146.0	128.0	119.0
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	123.0	103.0	94.4	99.3	118.0	116.0	112.0
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	132.0	114.0	94.7	93.0	108.0	107.0	102.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	136.0	124.0	105.0	100.0	99.7	91.9	48.9
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	136.0	135.0	134.0	102.0	86.1	81.8	72.4	43.7
38	0.0	0.0	0.0	0.0	0.0	0.0	95.0	120.0	120.0	121.0	96.0	76.8	78.4	79.1	80.0
39	0.0	0.0	0.0	0.0	0.0	79.0	69.0	104.0	92.8	78.9	89.4	72.1	85.4	80.0	74.9
40	0.0	0.0	0.0	0.0	104.0	94.0	77.0	96.9	94.2	72.5	85.4	79.2	79.7	82.7	89.4
41	0.0	0.0	0.0	0.0	138.0	116.0	89.0	88.8	79.7	89.1	79.7	78.8	82.4	82.5	72.4
42	0.0	0.0	185.0	162.0	154.0	144.0	117.0	92.5	78.7	73.3	70.3	74.3	91.0	71.2	70.4
43	0.0	159.0	156.0	148.0	139.0	124.0	102.0	88.5	55.5	73.9	68.0	71.1	89.5	81.1	70.3
44	0.0	153.0	149.0	145.0	141.0	132.0	113.0	82.5	58.5	84.2	87.2	68.2	80.1	74.1	80.5
45	0.0	0.0	153.0	145.0	143.0	134.0	89.7	82.6	67.8	61.4	70.0	74.8	77.0	71.1	63.6
46	0.0	0.0	159.0	146.0	136.0	127.0	107.0	88.9	77.5	81.2	74.9	81.6	77.2	84.2	74.6
47	0.0	0.0	160.0	145.0	133.0	129.0	115.0	116.0	99.1	78.3	73.8	81.9	76.3	85.1	74.5
48	0.0	0.0	0.0	144.0	123.0	114.0	112.0	109.0	98.5	88.3	68.9	80.5	69.0	76.1	84.5
49	0.0	0.0	0.0	143.0	132.0	108.0	111.0	110.0	107.0	106.0	94.0	81.8	78.8	84.9	72.1
50	0.0	0.0	0.0	141.0	138.0	122.0	106.0	101.0	102.0	106.0	92.5	91.8	88.2	89.4	74.9
51	0.0	0.0	0.0	118.0	118.0	106.0	90.8	95.5	98.6	96.2	101.0	99.2	85.5	84.6	83.7
52	0.0	0.0	0.0	0.0	71.5	79.1	78.6	86.0	93.4	98.7	103.0	92.1	87.8	87.5	90.6
53	0.0	0.0	0.0	0.0	61.5	73.5	73.2	79.9	81.0	96.1	98.4	81.6	84.8	88.7	82.2
54	0.0	0.0	0.0	0.0	0.0	74.7	51.6	89.2	87.5	92.4	93.9	83.7	95.7	80.0	80.1
55	0.0	0.0	0.0	0.0	0.0	0.0	42.3	71.0	83.1	80.9	78.8	70.7	78.2	77.2	79.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.8	84.9	80.7	70.2	66.6	32.3	61.8
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.6	75.5	66.6	38.7	49.4
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	67.9	86.1	70.6
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	84.7	71.9

+	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	231.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	213.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	228.0	207.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	228.0	226.0

5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	206.0	182.0	185.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	210.0	167.0	148.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	202.0	193.0	172.0	154.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.0	187.0	179.0	168.0	154.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	172.0	171.0	171.0	173.0	155.0	161.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.0	172.0	172.0	170.0	170.0	157.0	171.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.0	166.0	167.0	165.0	152.0	153.0	164.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	164.0	152.0	158.0	149.0	148.0	151.0	158.0	157.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.0	155.0	150.0	138.0	141.0	147.0	158.0	157.0
14	0.0	0.0	0.0	0.0	0.0	0.0	151.0	155.0	150.0	148.0	133.0	137.0	143.0	162.0	175.0
15	0.0	0.0	0.0	0.0	0.0	181.0	148.0	151.0	143.0	134.0	130.0	133.0	138.0	161.0	175.0
16	0.0	0.0	0.0	0.0	180.0	155.0	147.0	147.0	147.0	141.0	135.0	133.0	135.0	143.0	149.0
17	0.0	0.0	0.0	0.0	163.0	149.0	145.0	145.0	149.0	144.0	133.0	130.0	136.0	139.0	127.0
18	0.0	0.0	0.0	0.0	155.0	143.0	134.0	130.0	127.0	119.0	122.0	121.0	148.0	138.0	113.0
19	0.0	0.0	0.0	156.0	148.0	140.0	113.0	110.0	115.0	108.0	122.0	127.0	140.0	118.0	98.2
20	0.0	0.0	146.0	145.0	139.0	130.0	115.0	113.0	115.0	106.0	123.0	125.0	124.0	114.0	107.0
21	0.0	0.0	136.0	131.0	127.0	123.0	109.0	104.0	111.0	113.0	120.0	111.0	107.0	105.0	116.0
22	179.0	184.0	132.0	124.0	124.0	117.0	101.0	98.7	109.0	112.0	117.0	110.0	109.0	97.9	120.0
23	172.0	164.0	134.0	120.0	124.0	111.0	88.8	86.1	107.0	106.0	98.8	80.8	88.2	81.2	111.0
24	171.0	193.0	133.0	123.0	119.0	108.0	101.0	94.4	98.8	85.8	88.5	85.4	79.9	83.5	91.3
25	0.0	165.0	128.0	110.0	109.0	107.0	101.0	93.9	92.8	77.8	78.9	90.4	80.4	88.5	88.4
26	0.0	0.0	121.0	123.0	112.0	106.0	104.0	82.6	83.2	78.3	84.3	87.6	87.2	88.5	89.6
27	0.0	128.0	128.0	117.0	105.0	105.0	94.4	79.8	88.1	83.9	78.8	74.0	88.3	88.1	113.0
28	0.0	140.0	119.0	114.0	105.0	97.8	89.6	81.9	79.3	80.0	73.2	73.2	87.2	87.1	107.0
29	148.0	126.0	104.0	108.0	98.2	89.4	87.1	83.0	76.7	75.5	78.8	83.1	88.2	99.5	94.5
30	128.0	109.0	97.3	103.0	98.9	91.8	94.8	88.2	78.1	74.4	75.9	86.1	82.2	101.0	90.5
31	118.0	106.0	105.0	101.0	80.9	83.8	81.8	72.8	71.0	73.5	77.0	72.9	80.5	88.8	88.8
32	113.0	103.0	94.4	86.3	78.9	75.0	83.4	74.9	73.0	72.2	80.6	73.4	82.3	81.3	128.0
33	109.0	89.9	88.1	81.8	75.4	75.7	75.1	73.2	89.4	86.5	75.2	80.2	88.8	81.3	105.0
34	101.0	98.7	98.4	82.4	83.8	73.7	78.6	76.3	72.5	71.1	67.8	86.5	88.4	117.0	110.0
35	102.0	90.8	87.8	79.6	73.2	78.2	76.3	78.0	71.7	78.0	78.4	84.7	91.9	110.0	103.0
36	58.5	79.5	84.5	78.9	78.9	61.1	79.0	85.9	74.4	78.8	82.8	87.4	86.9	98.2	93.5
37	50.3	80.8	79.2	73.6	75.5	78.0	74.8	77.8	71.7	75.7	78.7	82.8	85.8	98.8	94.3
38	67.9	57.2	54.4	82.8	71.2	65.8	60.7	76.0	77.9	78.2	81.4	80.9	85.7	94.0	89.2
39	78.8	46.2	32.3	54.0	68.3	58.3	71.6	78.6	63.2	81.7	81.1	89.9	78.6	88.6	80.2
40	71.4	52.3	44.5	61.8	68.3	63.8	68.3	75.4	71.7	75.2	75.8	80.3	70.7	74.8	82.0
41	70.8	61.9	64.2	68.8	55.6	56.7	61.8	63.7	65.0	69.0	70.5	71.4	78.9	73.1	79.2
42	72.9	62.0	65.1	59.6	61.4	65.3	56.1	67.5	66.1	63.9	80.8	71.3	80.1	67.1	69.9
43	77.8	51.3	37.0	55.2	66.2	60.5	60.9	62.8	60.3	54.6	65.2	67.9	74.5	73.3	79.5
44	71.1	58.2	27.8	58.9	67.7	65.2	62.1	58.1	48.4	48.1	57.5	62.5	71.1	63.4	48.5
45	73.5	58.8	61.6	62.9	68.7	68.8	63.0	58.3	61.8	60.1	61.7	58.4	61.6	62.7	55.7
46	72.9	69.6	61.9	37.8	55.6	54.8	63.2	58.5	66.7	68.2	59.5	43.9	55.1	71.7	78.9
47	68.0	64.5	50.2	35.0	44.3	59.2	56.8	55.1	53.4	61.3	60.0	47.4	46.7	64.3	77.2
48	62.2	57.7	61.0	37.4	35.5	55.3	60.1	55.5	48.5	56.3	62.0	61.4	51.5	58.2	36.7
49	70.7	64.3	55.4	55.1	49.8	50.1	49.9	50.5	50.3	47.7	52.2	61.0	63.5	53.8	61.0
50	78.0	67.9	50.7	45.7	44.8	48.7	48.9	52.0	48.8	48.2	48.4	50.4	53.0	52.3	60.5
51	63.9	61.3	42.2	32.5	35.6	44.8	45.7	48.8	46.6	43.6	44.7	47.8	47.8	53.2	61.1
52	73.4	56.3	45.8	30.9	25.5	37.7	45.8	48.2	45.7	43.8	44.4	45.3	46.7	57.8	60.5
53	82.4	65.1	41.8	27.0	37.6	38.3	42.0	45.0	45.0	43.8	44.7	41.7	47.6	54.8	60.9
54	67.1	44.2	31.4	29.1	35.0	24.6	27.1	38.6	42.8	43.8	44.6	48.6	51.1	56.5	62.0
55	71.2	62.2	42.4	33.2	37.5	27.0	24.2	40.2	40.4	40.8	42.4	48.4	54.6	57.9	0.0
56	78.4	57.2	39.5	35.0	32.0	28.0	25.5	31.3	35.0	35.8	38.1	42.7	50.6	0.0	0.0
57	69.8	53.1	42.4	47.9	22.5	21.8	25.9	28.8	25.6	29.4	33.0	35.0	40.3	0.0	0.0
58	76.8	58.8	41.3	37.4	19.1	22.5	25.9	25.3	25.6	32.1	32.1	30.8	0.0	0.0	0.0
59	73.5	59.4	35.5	32.1	18.3	18.4	21.1	23.2	26.7	29.5	28.3	28.4	0.0	0.0	0.0
60	0.0	63.1	24.5	21.6	24.7	17.3	14.7	14.2	21.3	27.6	28.8	25.9	0.0	0.0	0.0
61	0.0	0.0	55.1	39.7	26.4	15.0	21.2	29.4	44.5	42.7	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	38.1	45.8	65.4	59.2	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.2	54.7	58.9	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.9	47.9	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.2	39.8	39.5	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.8	38.3	0.0	0.0	0.0	0.0	0.0	0.0

*	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	235.0	225.0	201.0	161.0	174.0	188.0	155.0	147.0	187.0	196.0	194.0	178.0	189.0	184.0	155.0
2	214.0	192.0	184.0	161.0	173.0	174.0	173.0	171.0	180.0	203.0	195.0	175.0	185.0	183.0	184.0
3	182.0	182.0	182.0	185.0	180.0	180.0	187.0	191.0	193.0	195.0	189.0	179.0	184.0	187.0	173.0
4	181.0	178.0	169.0	189.0	191.0	183.0	197.0	197.0	192.0	190.0	186.0	188.0	195.0	186.0	175.0
5	175.0	163.0	155.0	175.0	183.0	183.0	188.0	189.0	165.0	184.0	181.0	161.0	163.0	178.0	171.0
6	147.0	138.0	148.0	188.0	170.0	170.0	170.0	180.0	163.0	175.0	163.0	160.0	163.0	182.0	157.0
7	129.0	120.0	127.0	142.0	144.0	133.0	137.0	166.0	179.0	162.0	137.0	135.0	153.0	158.0	139.0
8	134.0	125.0	121.0	118.0	112.0	104.0	102.0	113.0	138.0	130.0	110.0	107.0	138.0	150.0	128.0
9	149.0	131.0	117.0	102.0	95.2	93.0	94.5	98.9	107.0	101.0	93.2	92.4	124.0	130.0	103.0
10	181.0	142.1	114.0	90.7	81.1	84.5	104.0	123.0	103.0	71.2	77.0	84.6	103.0	104.0	83.9
11	159.0	145.0	117.0	93.8	79.2	81.0	93.5	136.0	88.4	53.1	58.7	59.4	71.4	88.3	84.9
12	156.0	145.0	124.0	110.0	99.3	88.6	82.8	94.9	76.9	55.7	59.9	57.8	67.1	87.4	91.1
13	157.0	137.0	121.0	135.0	98.2	88.3	83.5	83.1	73.4	65.7	69.4	71.8	88.9	112.0	108.0
14	180.0	118.0	98.1	95.3	85.0	82.9	80.4	77.7	71.9	88.2	72.7	88.5	117.0	138.0	140.0
15	146.0	97.9	79.8	93.2	100.0	91.7	84.9	77.2	71.1	69.5	80.7	106.0	134.0	143.0	142.0
16	114.0	97.5	87.0	116.0	117.0	105.0	91.4	79.7	70.7	69.2	82.5	114.0	136.0	142.0	135.0
17	106.0	96.5	105.0	107.0	102.0	81.9	75.6	75.8	88.1	62.4	79.2	109.0	119.0	112.0	98.6
18	104.0	108.0	110.0	95.1	80.5	89.0	70.8	82.5	82.8	80.5	104.0	120.0	122.0	90.1	75.0
19	88.8	91.9	75.1	83.2	85.6	82.3	83.2	99.8	115.0	140.0	149.0	125.0	123.0	98.2	84.9
20	68.9	97.3	81.1	77.7	95.4	96.4	98.3	105.0	115.0	156.0	167.0	125.0	120.0	111.0	84.7
21	84.6	94.8	84.3	79.4	89.0	92.5	94.9	104.0	114.0	128.0	127.0	109.0	120.0	94.1	0.0
22	97.2	77.4	78.1	62.4	80.1	86.0	85.3	95.7	111.0	115.0	105.0	102.0	117.0	101.0	94.9
23	93.5	77.8	68.3	68.8	79.8	82.4	83.6	85.4	93.0	114.0	104.0	97.9	114.0	109.0	98.6
24	107.0	77.9	72.5	77.4	80.3	86.1	87.4	82.9	108.0	112.0	98.3	94.7	88.0	93.0	93.4
25	109.0	89.3	85.3	91.1	75.8	81.1	88.8	92.9	110.0	113.0	104.0	95.9	75.8	82.1	85.8
26	109.0	83.5	95.2	89.2	83.3	78.3	78.8	97.0	118.0	111.0	99.7	86.5	85.1	0.0	0.0
27	109.0	104.0	93.5	82.7	88.5	81.4	78.4	92.1	127.0	119.0	104.0	87.3	69.8	0.0	0.0
28	104.0	88.0	81.3	93.1	100.0	96.8	99.4	101.0	115.0	119.0	114.0	111.0	102.0	0.0	0.0
29	86.7	81.9	81.3	96.8	99.4	97.4	102.0	111.0	114.0	115.0	117.0	116.0	0.0	0.0	0.0
30	85.0	80.4	83.6	101.0	96.4	89.7	98.5	109.0	113.0	115.0	118.0	117.0	0.0	0.0	0.0
31	88.4	89.5	93.0	87.0	87.6	94.7	99.2	106.0	114.0	118.0	118.0	116.0	0.0	0.0	0.0
32	92.8	93.0	110.0	93.6	95.5	91.1	98.9	102.0	107.0	106.0	107.0	110.0	0.0	0.0	0.0
33	99.8	88.5	90.0	88.1	94.1	98.9	86.9	101.0	95.8	82.2	96.5	108.0	0.0	0.0	0.0
34	92.3	86.4	91.2	87.5	82.3	98.5	101.0	96.8	99.4	83.0	113.0	112.0	0.0	0.0	0.0
35	94.9	92.5	90.4	82.4	86.3	91.1	88.7	89.6	93.3	91.8	0.0	0.0	0.0	0.0	0.0
36	87.0	87.5	77.3	78.4											

37	84.8	83.2	79.1	83.5	81.8	79.9	78.2	75.9	82.5	0.0	0.0	0.0	0.0	0.0	0.0
38	85.6	79.5	78.4	75.6	75.8	72.8	31.1	37.4	49.9	0.0	0.0	0.0	0.0	0.0	0.0
39	90.5	82.4	75.8	76.0	79.2	77.3	63.7	60.4	58.1	0.0	0.0	0.0	0.0	0.0	0.0
40	85.4	87.8	78.5	68.9	77.7	97.5	81.9	75.5	70.0	0.0	0.0	0.0	0.0	0.0	0.0
41	82.3	83.4	73.8	65.5	73.0	91.0	85.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	80.2	73.0	89.3	66.3	71.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	81.5	67.9	67.7	55.9	64.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	93.0	91.5	65.5	0.0	59.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	59.8	83.2	70.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	88.7	88.2	85.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	86.5	93.0	90.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	89.7	90.7	80.4	77.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	71.5	67.7	71.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	81.4	77.8	69.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	73.5	77.8	71.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	67.5	71.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	46	47	48	49	50	51	52
1	143.0	128.0	117.0	94.5	89.2	87.8	0.0
2	151.0	133.0	129.0	114.0	98.1	95.1	0.0
3	164.0	138.0	129.0	121.0	108.0	98.0	0.0
4	168.0	151.0	132.0	122.0	110.0	101.0	0.0
5	164.0	148.0	132.0	121.0	114.0	108.0	0.0
6	142.0	128.0	118.0	112.0	110.0	107.0	0.0
8	107.0	102.0	98.5	107.0	108.0	102.0	0.0
9	99.9	95.2	99.7	113.0	0.0	0.0	0.0
10	87.7	93.1	102.0	98.4	93.1	0.0	0.0
11	86.2	85.0	91.1	92.1	88.9	0.0	0.0
12	92.3	73.3	84.2	89.7	85.1	0.0	0.0
13	81.0	72.1	92.9	90.8	0.0	0.0	0.0
14	110.0	90.4	94.0	0.0	0.0	0.0	0.0
15	127.0	105.0	96.1	93.2	0.0	0.0	0.0
16	125.0	113.0	101.0	94.8	91.7	0.0	0.0
17	99.4	99.5	97.2	0.0	0.0	0.0	0.0
18	83.5	87.8	87.5	80.2	0.0	0.0	0.0
19	87.4	88.8	88.5	0.0	0.0	0.0	0.0
20	93.1	91.5	0.0	0.0	0.0	0.0	0.0

TABLE BOUN(I,J) BOUNDARY ARRAY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	98
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	98	88
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	98	88
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	98	85
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	98	85	85
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	98	85	85	85
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88	98	85	85	85
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95	85	86	96	85	85	85	83
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95	95	95	95	85	85	83
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	85	85	95	85	83	83
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	85	95	85	83	93
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	95	85	83	93
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	95	85	85	83	93
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	95	85	83	83	93
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	95	85	85	83	83	93
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	87	85	95	86	85	83	93	83
31	0	0	0	0	0	0	0	0	0	0	0	0	0	87	87	85	95	85	83	83	93	83
32	0	0	0	0	0	0	0	0	0	0	0	0	97	87	87	85	85	95	83	93	83	83
33	0	0	0	0	0	0	0	0	0	0	88	88	87	97	97	97	95	95	83	93	83	83
34	0	0	0	0	0	0	0	0	88	86	88	88	88	88	88	86	95	83	83	93	83	83
35	0	0	0	0	0	0	0	0	88	88	86	88	86	88	88	86	96	83	93	83	83	83
36	0	0	0	0	0	0	0	0	88	86	86	86	88	88	86	96	83	83	93	83	83	83
37	0	0	0	0	0	0	0	88	86	86	86	86	88	88	86	96	83	83	93	83	83	83
38	0	0	0	0	0	0	0	88	86	88	88	88	88	88	86	96	83	83	93	83	83	88
39	0	0	0	0	0	0	0	88	86	88	86	86	86	88	86	96	83	83	93	83	83	88
40	0	0	0	0	0	0	0	88	86	86	86	86	88	86	86	96	86	93	83	83	83	88
41	0	0	0	0	0	0	0	84	88	86	86	86	88	86	86	96	86	83	93	83	83	88
42	0	0	84	84	94	84	84	84	84	84	88	88	88	88	86	86	96	83	93	83	86	86
43	0	84	84	84	84	94	94	84	84	84	84	88	88	88	86	86	96	83	93	83	86	86
44	0	99	99	89	84	84	84	94	84	84	84	88	88	88	89	88	88	96	93	88	86	88
45	0	0	99	89	84	84	84	84	94	84	84	84	88	86	88	86	86	86	98	88	86	88
46	0	0	99	89	89	84	84	84	84	94	84	84	84	89	88	88	86	86	98	88	86	88
47	0	0	99	89	89	89	84	84	84	84	94	84	84	84	88	88	88	88	98	98	88	88
48	0	0	0	99	89	89	84	84	84	84	84	94	84	84	88	88	88	89	88	98	86	88
49	0	0	0	99	89	89	89	84	84	84	84	94	84	84	84	88	88	88	88	98	88	88
50	0	0	0	99	89	89	89	84	84	84	84	84	94	84	84	84	88	88	88	88	98	88
51	0	0	0	99	89	88	89	84	84	84	84	84	84	94	84	84	88	88	88	88	88	98
52	0	0	0	0	99	89	89	84	84	84	84	84	94	84	84	84	84	88	88	88	88	88
53	0	0	0	0	99	89	89	89	84	84	84	84	84	94	84	84	84	88	86	88	88	88
54	0	0	0	0	0	99	99	89	84	84	84	84	84	94	84	84	84	84	86	88	88	88
55	0	0	0	0	0	0	99	99	89	84	84	84	84	94	84	84	84	84	86	88	88	88
56	0	0	0	0	0	0	0	0	99	99	84	84	84	84	94	84	84	84	86	86	88	88
57	0	0	0	0	0	0	0	0	0	0	99	99	84	84	84	94	84	84	86	86	86	86
58	0	0	0	0	0	0	0	0	0	0	0	0	99	99	84	84	94	84	86	86	86	86
59	0	0	0	0	0	0	0	0	0	0	0	0	0	99	99	98	99	84	86	86	86	98
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	88	88	86	86	98
61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	99	99	99	88
62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98

+	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
1	0	0	0	0	0	0	0	-88	-88	-88	-88	-88	-88	-88	-98	-81	-91	-81	-81	0	-81	-81
2	0	0	0	0	0	0	0	88	88	88	88	88	88	98	83	83	91	81	81	0	81	81
3	0	0	0	0	0	0	98	88	88	88	88	88	98	83	83	83	0	91	81	81	81	81
4	0	0	0	0	0	0	98	88	88	88	88	98	83	83	83	83	0	91	81	81	81	81
5	0	0	0	0	0	88	98	88	88	88	98	83	83	83	0	0	0	81	91	81	81	81
6	0	0	0	0	0	88	98	88	88	98	83	83	83	0	0	0	81	81	81	91	81	81
7	0	0	0	0	88	98	88	98	98	83	83	83	83	0	0	0	81	81	91	81	81	81

8	0	0	0	88	88	88	88	88	83	83	83	83	0	0	0	81	81	81	81	81	81	81
9	0	0	88	88	88	88	88	83	83	83	83	0	0	81	81	81	81	81	81	81	81	81
10	0	88	88	88	85	85	83	83	83	83	0	0	0	81	81	81	81	81	81	81	81	81
11	0	88	88	85	85	83	83	83	83	0	0	0	81	81	81	81	81	81	81	81	81	81
12	88	88	88	85	83	83	83	83	83	0	0	0	81	81	81	81	81	81	81	81	81	81
13	88	88	85	85	83	83	83	83	0	0	0	81	81	81	81	81	81	81	81	81	81	81
14	88	88	85	85	83	83	83	83	0	0	0	81	81	81	81	81	81	81	81	81	81	81
15	88	85	85	85	83	83	83	0	0	0	0	81	81	81	81	81	81	81	81	81	81	81
16	85	85	85	83	83	83	83	0	0	0	81	81	81	81	81	81	81	81	81	81	81	81
17	85	85	83	83	83	83	0	0	0	0	81	81	81	81	81	81	81	81	81	81	81	81
18	85	83	83	83	83	0	0	0	0	81	81	81	81	81	81	81	81	81	81	81	81	81
19	85	83	83	83	83	83	0	0	81	81	81	81	81	81	81	81	81	81	81	81	81	81
20	83	83	83	83	83	83	83	0	81	81	81	81	81	81	81	81	81	81	81	81	81	81
21	83	83	83	83	83	83	82	82	0	81	81	81	81	81	81	81	81	81	81	81	81	90
22	83	83	83	83	83	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	81	81
23	83	83	83	83	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	81	81
24	83	83	83	83	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	81	81
25	83	83	83	82	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	81	90
26	83	83	83	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	81	90	0
27	83	83	83	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	81	90	0
28	83	83	82	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	81	90	0
29	83	83	82	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	90	0	0
30	83	83	82	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	90	0	0
31	83	82	82	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	90	0	0
32	83	82	82	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	90	0	0
33	83	82	82	82	82	82	82	0	81	81	81	81	81	81	81	81	81	81	81	90	0	0
34	83	82	82	82	82	82	0	0	81	81	81	81	81	81	81	81	81	81	90	90	0	0
35	83	83	82	82	82	82	0	0	81	81	81	81	81	81	81	81	81	90	0	0	0	0
36	83	86	82	82	82	82	0	0	81	81	81	81	81	81	81	81	81	90	0	0	0	0
37	86	86	82	82	82	82	82	0	81	81	81	81	81	81	81	81	90	0	0	0	0	0
38	86	86	86	82	82	82	82	0	81	81	81	81	81	81	81	81	90	0	0	0	0	0
39	86	86	86	82	82	82	82	0	81	81	81	81	81	81	81	81	90	0	0	0	0	0
40	86	86	86	86	82	82	82	81	81	81	81	81	81	81	81	90	90	0	0	0	0	0
41	86	86	86	86	82	82	82	82	81	81	81	81	81	90	90	0	0	0	0	0	0	0
42	86	86	86	86	86	86	82	82	82	81	81	81	90	0	0	0	0	0	0	0	0	0
43	86	86	86	86	86	86	86	82	82	81	81	90	90	0	0	0	0	0	0	0	0	0
44	86	86	86	86	86	86	86	86	0	81	90	0	90	0	0	0	0	0	0	0	0	0
45	86	86	86	86	86	86	86	86	0	81	90	0	0	0	0	0	0	0	0	0	0	0
46	86	86	86	86	86	86	86	86	86	0	90	0	0	0	0	0	0	0	0	0	0	0
47	86	86	86	86	86	86	86	86	86	0	90	0	0	0	0	0	0	0	0	0	0	0
48	86	86	86	86	86	86	86	86	86	86	0	0	0	0	0	0	0	0	0	0	0	0
49	86	86	86	86	86	86	86	86	86	86	90	0	0	0	0	0	0	0	0	0	0	0
50	86	86	86	86	86	86	86	86	86	86	90	0	0	0	0	0	0	0	0	0	0	0
51	86	86	86	86	86	86	86	86	86	86	90	0	0	0	0	0	0	0	0	0	0	0
52	86	86	86	86	86	86	86	90	90	90	0	0	0	0	0	0	0	0	0	0	0	0
53	86	86	86	86	86	86	86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	86	86	86	86	86	86	90	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	86	86	86	86	86	86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	86	86	86	86	86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	86	86	86	86	90	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	86	86	86	86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	86	86	86	86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	86	86	86	90	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61	86	90	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62	86	86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
63	86	86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
64	86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	86	86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
66	90	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

+	45	46	47	48	49	50	51	52
1	-81	-81	-81	-81	-81	-81	-81	0
2	81	81	81	81	81	81	90	0
3	81	81	81	81	81	81	90	0
4	81	81	81	81	81	81	90	0
5	81	81	81	81	81	81	90	0
6	81	81	81	81	81	81	90	0
7	81	81	81	81	81	81	90	0
8	81	81	81	81	81	90	90	0
9	81	81	81	81	90	0	0	0
10	81	81	81	81	81	90	0	0
11	81	81	81	81	81	90	0	0
12	81	81	81	81	90	90	0	0
13	81	81	81	81	90	0	0	0
14	81	81	81	90	0	0	0	0
15	81	81	81	81	90	0	0	0
16	81	81	81	90	90	90	0	0
17	81	81	81	90	0	0	0	0
18	81	81	81	81	90	0	0	0
19	81	81	81	90	0	0	0	0
20	90	90	90	0	0	0	0	0
22	90	0	0	0	0	0	0	0
23	90	0	0	0	0	0	0	0
24	90	0	0	0	0	0	0	0
25	90	0	0	0	0	0	0	0

TABLE CELD(I,J) LOWER LIMIT ON EFFLUENT IN CUBIC FT PER SEC

	12	13	14	15	16	17	18	19	20	21	22
22	0.0	0.0	0.0	0.0	0.0	0.0	1829.0	0.0	0.0	0.0	0.0
33	0.0	0.0	0.0	0.0	298.0	7700.0	0.0	0.0	0.0	0.0	0.0
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	257.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	0.0	181.0	0.0	0.0	0.0	0.0	0.0

+	23	24	25	26	27	28	29	30	31	32	33
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	283.0
43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	159.0	0.0	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1047.0	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	207400.0
61	10400.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

62	10400.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	173000.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	34	35	36	37	38	39	40	41	42	43	44
18	0.0	308.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	292.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	600.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	45	46	47	48	49	50	51	52
14	0.0	0.0	0.0	194600.0	0.0	0.0	0.0	0.0

TABLE CINF(I,J) INFLUENT IN CUBIC FT PER SEC

	1	2	3	4	5	6	7	8	9	10
42	0.0	0.0	0.0	0.0	290.00	0.0	0.0	0.0	0.0	0.0
44	0.0	40074.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	11	12	13	14	15	16	17	18	19	20
22	0.0	0.0	0.0	0.0	10370.00	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	2430.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	21	22	23	24	25	26	27	28	29	30
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	413.00	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	513.00	0.0

+	31	32	33	34	35	36	37	38	39	40
1	0.0	0.0	0.0	0.0	0.0	0.0	1780.00	0.0	2247.00	0.0

+	41	42	43	44	45	46	47	48	49	50
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1148.00	0.0	0.0

+	51	52
2	471082.00	0.0

TABLE ELEV(I,J) INITIAL HEAD ELEVATION IN FT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	199.5
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	193.8
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6	199.0	195.3	194.8
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	201.2	198.0	188.4
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	191.0	183.0	181.4
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	175.0	177.9
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.2
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	190.9	196.2
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.5	191.7
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	188.0	182.4	176.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	169.7	177.0	180.9	178.8
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	189.1	163.7	173.1	189.4	180.1
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	181.2	161.0	160.7	170.2	184.5	190.6
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.3	168.0	166.0	163.7	164.5	170.8	183.8	186.8
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	177.0	170.8	183.9	152.7	138.0	136.0	141.9	153.7	172.1	172.3
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	164.8	159.3	148.9	128.2	126.0	127.0	122.0	144.6	165.4	168.3
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	168.3	157.2	125.0	120.0	119.7	111.9	127.7	150.6	159.1	162.2
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	197.6	179.3	159.9	122.0	116.1	101.6	98.5	124.0	150.3	156.0	158.4
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	195.1	183.4	150.2	118.0	98.8	98.4	99.1	118.7	151.0	156.0	158.6
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	187.4	171.2	141.4	114.1	92.1	105.4	100.0	108.7	149.1	158.7	166.2
40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	172.0	152.5	130.8	108.8	86.2	88.7	82.7	104.3	145.8	153.4	158.6
41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	125.0	113.0	103.8	99.7	96.8	102.4	102.5	124.2	144.0	150.3	164.2
42	0.0	0.0	185.0	190.1	203.2	189.1	145.0	112.5	98.7	93.3	90.3	109.4	116.0	116.1	121.7	133.9	148.8	153.5
43	0.0	231.9	223.2	211.4	196.1	193.1	173.0	106.5	80.3	93.5	105.1	106.4	108.5	110.8	110.0	101.4	141.5	147.8
44	0.0	238.3	235.8	222.4	199.3	186.2	154.1	127.5	93.2	84.2	87.2	101.9	105.3	105.8	102.9	91.1	118.4	140.5
45	0.0	0.0	234.2	222.1	205.3	187.2	151.8	102.8	119.3	89.2	90.0	102.2	104.6	103.9	101.4	96.9	97.4	120.8
46	0.0	0.0	227.9	219.0	205.4	189.4	180.0	135.1	109.3	128.4	111.5	103.7	106.2	104.2	100.5	95.4	89.5	107.3
47	0.0	0.0	222.4	214.4	205.1	189.7	153.1	147.4	142.5	138.9	143.8	125.0	113.4	106.8	101.2	93.5	84.6	92.5
48	0.0	0.0	0.0	216.5	200.2	189.0	170.4	150.9	145.2	144.3	142.3	141.6	114.7	108.1	103.9	93.5	77.7	90.8
49	0.0	0.0	0.0	212.9	197.3	187.6	177.4	152.4	139.3	138.4	139.1	145.0	123.6	104.9	102.7	94.0	86.0	85.4
50	0.0	0.0	0.0	209.2	194.1	187.1	176.6	153.0	132.2	126.0	134.6	142.0	143.2	113.0	104.4	96.1	87.9	88.2
51	0.0	0.0	0.0	205.8	196.3	184.9	179.7	166.5	128.8	122.5	124.3	137.9	142.3	142.0	103.7	98.3	86.4	73.9
52	0.0	0.0	0.0	0.0	204.8	191.5	178.4	161.1	140.4	124.7	123.0	141.0	148.5	132.9	116.2	99.9	86.0	73.2
53	0.0	0.0	0.0	0.0	204.9	191.6	183.3	171.0	152.3	132.9	124.7	144.2	146.9	145.7	121.0	102.4	86.1	71.2
54	0.0	0.0	0.0	0.0	0.0	197.6	195.2	180.5	163.2	143.0	139.2	149.3	150.8	148.0	115.6	98.2	83.1	70.5
55	0.0	0.0	0.0	0.0	0.0	0.0	193.5	187.5	175.5	167.5	166.6	153.8	152.8	149.1	123.5	91.2	79.9	86.9
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.5	182.9	166.2	166.2	149.6	149.3	142.0	108.0	78.0	59.5
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	179.3	176.2	158.0	151.4	144.1	137.3	109.7	81.5
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	171.4	168.9	151.3	143.3	135.4	101.8
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.9	164.2	162.8	154.8	113.2
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	154.6	129.5
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	148.3

62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	300.0	300.0	300.0	300.0	300.0	299.0	300.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	287.5	288.2	289.4	290.7	292.2	293.5	295.3
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	270.7	276.5	278.4	280.4	282.6	285.3	288.6	291.5
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	281.8	283.8	267.3	270.2	273.8	277.9	282.9	288.2
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	247.0	251.9	247.4	248.5	254.2	262.7	269.5	275.0	281.8
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	240.4	248.7	240.0	238.5	246.3	249.4	257.5	283.5	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237.2	243.5	236.7	239.3	235.3	230.6	232.0	238.8	253.7	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	244.4	243.5	.243.3	238.9	232.5	225.2	221.5	222.7	227.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	240.5	239.5	236.9	236.5	230.2	222.8	219.9	220.4	219.7	0.0	0.0	211.4
10	0.0	0.0	0.0	0.0	0.0	238.2	234.9	225.3	225.9	224.1	223.0	219.1	219.2	228.0	0.0	0.0	0.0	205.1
11	0.0	0.0	0.0	0.0	0.0	238.2	223.5	218.0	217.9	220.9	238.1	219.4	219.8	0.0	0.0	0.0	200.5	197.9
12	0.0	0.0	0.0	0.0	237.7	223.6	216.2	215.9	214.1	220.6	235.5	216.5	218.6	0.0	0.0	0.0	190.0	189.0
13	0.0	0.0	0.0	0.0	234.7	220.6	216.1	213.7	217.4	229.0	219.2	213.8	0.0	0.0	0.0	202.9	192.5	198.9
14	0.0	0.0	0.0	232.0	222.5	211.5	210.9	212.5	228.5	214.7	211.9	214.6	0.0	0.0	0.0	198.4	205.5	223.1
15	0.0	0.0	222.4	224.9	213.4	206.1	205.8	210.9	227.6	211.1	208.4	0.0	0.0	0.0	0.0	189.3	207.6	223.7
16	0.0	204.6	220.4	208.8	205.1	199.9	200.5	206.3	223.4	209.3	204.9	0.0	0.0	0.0	178.0	185.3	203.0	219.3
17	0.0	197.4	218.3	203.7	198.6	196.1	197.6	205.2	219.0	210.7	0.0	0.0	0.0	0.0	172.5	188.8	215.1	210.3
18	0.0	199.2	214.4	201.6	198.8	196.7	201.8	211.3	197.9	0.0	0.0	0.0	0.0	157.0	163.9	193.5	212.1	207.3
19	198.6	202.2	201.2	197.0	196.6	198.3	210.4	181.4	174.3	160.0	0.0	0.0	182.4	155.8	159.9	174.8	195.3	209.9
20	201.7	197.9	199.3	192.4	182.1	197.8	207.4	178.2	157.6	145.9	147.7	0.0	156.1	154.8	159.9	174.3	194.0	207.8
21	199.2	193.1	181.0	180.9	181.7	205.8	190.8	165.4	147.0	137.0	147.2	150.2	0.0	151.3	180.7	177.3	203.2	202.5
22	195.5	183.9	181.1	184.8	189.4	204.1	182.5	164.4	138.9	128.0	131.1	140.0	0.0	137.8	150.6	173.5	201.8	197.9
23	207.9	186.2	184.1	182.8	188.8	197.7	188.8	150.9	132.3	120.4	122.0	131.0	0.0	126.2	141.9	154.4	185.5	198.5
24	203.8	180.4	181.1	184.4	192.5	171.4	148.8	134.6	120.2	114.1	115.5	111.3	0.0	102.9	130.4	156.0	188.1	179.3
25	199.7	180.6	180.1	192.1	175.9	153.8	132.5	122.1	113.4	110.4	106.5	108.4	0.0	108.3	113.5	146.0	170.7	180.4
26	197.1	181.3	179.2	190.8	187.0	141.8	120.4	115.2	117.6	117.3	118.9	0.0	129.0	126.4	121.7	148.3	161.5	139.7
27	180.4	178.1	177.7	187.9	182.4	137.0	114.4	101.3	97.3	111.3	138.3	0.0	131.8	135.0	137.8	153.5	154.7	114.0
28	175.1	170.3	173.8	184.2	155.7	134.0	105.1	93.2	106.9	134.3	122.7	0.0	130.3	137.2	150.2	129.2	120.0	116.8
29	173.6	172.5	173.9	180.0	150.2	128.8	110.6	105.9	118.5	137.2	119.8	0.0	120.7	123.5	149.0	115.6	119.4	122.6
30	174.0	173.9	182.4	155.7	142.7	123.1	104.2	108.1	135.9	125.0	121.0	0.0	105.0	116.4	147.7	121.8	118.4	120.9
31	172.8	174.7	179.2	159.2	137.0	111.7	97.7	111.4	144.2	122.5	119.9	0.0	111.1	121.5	142.0	110.9	117.6	114.7
32	175.9	178.7	165.8	151.2	132.4	106.4	92.2	110.8	148.8	121.3	111.3	0.0	154.2	147.9	130.0	113.6	115.5	111.1
33	174.7	177.7	161.8	146.1	132.3	107.5	92.8	109.9	145.8	124.8	122.5	0.0	157.2	127.9	110.0	108.1	114.1	116.9
34	173.2	177.4	160.5	145.3	128.3	105.3	94.0	114.8	145.7	125.3	0.0	0.0	156.6	118.4	111.2	107.8	102.3	118.5
35	175.1	188.8	157.0	142.8	124.4	113.9	108.0	125.5	147.0	127.1	0.0	0.0	156.2	122.4	110.4	102.4	108.3	111.1
36	170.2	184.7	153.3	138.3	115.6	94.4	98.8	120.8	143.1	126.1	0.0	0.0	154.8	112.3	97.3	98.4	98.3	109.5
37	167.4	160.8	150.1	131.2	97.6	98.9	95.7	110.8	138.8	125.0	125.3	0.0	153.8	121.3	99.1	103.6	115.4	133.2
38	164.1	158.5	145.8	102.7	101.8	102.6	102.3	101.4	135.0	124.2	133.3	0.0	154.7	146.3	122.4	117.2	125.2	138.8
39	159.5	150.8	138.6	91.8	99.4	103.2	104.8	108.0	117.7	138.9	136.2	0.0	140.1	146.9	125.6	124.7	134.9	149.0
40	155.9	148.8	131.9	86.3	95.4	101.4	100.4	101.4	100.8	138.9	137.0	113.5	127.5	147.0	138.6	130.4	144.0	184.1
41	157.1	147.8	129.9	88.6	86.7	101.9	89.0	90.6	103.4	125.1	138.8	119.5	123.5	145.4	137.0	140.9	182.4	184.9
42	155.5	145.0	130.2	116.2	112.7	117.1	119.0	122.8	128.0	138.7	144.3	130.2	129.8	146.8	141.8	151.3	170.8	0.0
43	152.1	137.6	128.0	118.8	116.8	119.1	122.7	128.9	133.2	142.5	147.3	149.4	147.8	147.8	160.1	169.4	189.0	0.0
44	149.3	133.9	125.6	118.2	117.9	119.3	122.4	128.3	135.2	148.8	150.1	154.1	0.0	164.8	172.1	0.0	185.2	0.0
45	137.3	130.9	124.0	121.3	121.8	127.0	123.7	125.2	131.5	139.9	147.0	155.0	0.0	172.2	175.8	0.0	0.0	0.0
46	132.2	132.2	124.4	123.0	123.2	125.7	123.2	123.2	129.0	134.1	138.9	143.4	148.8	0.0	187.6	0.0	0.0	0.0
47	128.9	135.0	129.8	125.9	125.0	121.9	124.1	127.0	128.0	130.3	122.5	125.2	142.3	0.0	193.8	0.0	0.0	0.0
48	116.8	132.6	133.9	123.8	119.9	118.7	120.2	130.3	125.6	119.4	100.8	98.0	117.0	143.2	0.0	0.0	0.0	0.0
49	108.9	128.1	132.8	129.2	125.0	117.6	115.9	118.1	114.3	93.8	83.8	84.8	110.2	143.1	164.1	0.0	0.0	0.0
50	96.8	112.6	127.4	131.2	128.8	119.7	116.5	111.6	108.1	97.5	98.2	107.1	124.8	140.2	183.1	0.0	0.0	0.0
51	80.9	97.9	111.3	127.1	129.1	118.0	112.7	93.3	79.2	82.3	108.7	127.4	137.2	152.3	160.6	0.0	0.0	0.0
52	69.2	86.4	98.9	110.5	123.7	117.2	108.3	80.4	68.1	84.8	121.6	155.8	158.7	159.9	0.0	0.0	0.0	0.0
53	61.8	77.0	88.2	98.1	113.0	121.1	104.4	78.4	73.8	84.5	128.9	158.3	0.0	0.0	0.0	0.0	0.0	0.0
54	57.3	71.1	78.6	93.3	107.4	120.7	99.8	86.4	92.4	116.4	153.5	158.2	0.0	0.0	0.0	0.0	0.0	0.0
55	53.2	57.8	78.6	92.0	108.3	123.0	112.9	102.0	115.9	135.2	154.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	55.0	63.1	81.5	100.0	114.5	126.7	115.8	115.5	133.1	149.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	68.8	80.9	93.5	108.7	120.7	128.3	118.5	123.3	145.0	151.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	89.8	93.9	104.2	119.0	130.2	129.6	122.8	128.4	144.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	107.0	109.3	117.6	132.5	134.6	130.4	124.9	128.6	141.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	125.5	124.8	128.7	138.2	136.7	134.9	133.8	137.5	139.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	146.7	146.8	140.5	136.8	135.9	135.5	133.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	132.4	135.3	135.9	134.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	137.0	136.7	134.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	135.1	133.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	131.8	129.7	122.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	128.5	125.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
1	301.0	301.0	298.0	288.0	290.0	0.0	285.0	284.0	281.0	276.0	273.0	271.0	272.0	274.0	275.0	0.0
2	296.8	298.6	292.3	288.4	284.8	0.0	278.0	275.5	273.7	270.5	268.6	266.0	269.4	271.2	273.3	0.0
3	294.2	295.0	0.0	279.0	276.8	273.2	273.0	270.7	267.4	264.7	263.7	265.0	268.8	268.3	269.9	0.0
4	292.5	293.1	0.0	268.8	271.2	269.9	268.4	265.2	261.7	258.1	260.5	262.4	264.2	268.0	266.9	0.0
5	0.0	0.0	0.0	252.1	265.0	263.6	261.0	258.1	256.0	254.4	257.1	259.8	262.0	264.0	265.3	0.0
6	0.0	0.0	229.9	240.9	251.2	258.8	256.0	253.9	252.7	253.8	256.0	256.5	261.0	263.8	266.4	0.0
7	0.0	0.0	222.8	238.6	253.8	253.6	251.9	250.5	250.8	252.6	254.9	257.5	260.2	263.1	266.0	0.0
8	0.0	213.1	220.5	239.7	251.9	250.2	248.4	246.7	248.8	251.2	253.7	258.2	259.1	262.8	264.3	0.0
9	208.8	215.4	232.4	246.7	247.1	246.5	245.2	243.8	247.0	249.6	252.2	254.7	257.4	0.0	0.0	0.0
10	207.6	218.9	239.7	242.1	242.8	242.7	242.7	243.4	245.5	248.0	250.5	253.0	255.3	257.0	0.0	0.0
11	207.0	218.5	238.2	238.9	239.3	238.8	240.0	241.7	243.9	246.2	248.7	251.2	253.7	256.2	0.0	0.0
12	198.5	228.6	232.8	236.3	236.6	236.4	237.7	239.7	241.9	244.2	246.6	249.1	251.8	251.6	0.0	0.0
13	224.7	225.8	228.4	231.6	235.3	234.6	235.2	237.0	239.3	241.5	244.0	246.8	248.3	0.0	0.0	0.0
14	221.7	220.9	222.6	226.8	232.5	230.9	230.4	232.1	234.0	236.9	240.4	245.9	0.0	0.0	0.0	0.0
15	217.6	212.8	213.4	218.8	228.6	224.4	218.9	223.4	223.5	227.9	233.5	240.7	245.0	0.0	0.0	0.0
16	210.3	206.7	207.9	214.0	225.6	218.3	210.6	212.1	217.4	226.7	232.2	244.5	248.7	241.8	0.0	0.0
17	205.1	202.5	204.9	212.4	223.4	212.0	204.3	205.9	212.7	224.4	231.7	237.1	0.0	0.0	0.0	0.0
18	202.9	200.8	204.4	213.0	221.2	204.8	198.9	203.8	211.5	222.9	230.6	236.3	235.3	0.0	0.0	0.0
19	202.4	201.3	207.9	225.8	207.1	193.6	194.4	204.7	214.8	222.8	229.2	239.3	0.0	0.0	0.0	0.0
20	202.8	203.6	213.4	203.2	191.6	183.4	191.6	210.7	230.4	233.5	230.0	0.0	0.0	0.0	0.0	0.0
21	204.2	207.4	192.4	180.9	174.3	177.8	189.8	225.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	202.7	185.7	173.1	165.7	164.1	169.6	187.4	212.0	224.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	178.6	152.4	156.2	153.7	157.3	168.4	186.3	210.6	225.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	158.0	144.3	142.8	150.8	160.9	174.8	192.2	208.7	225.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	140.8	125.6	138.2	152.7	168.5	185.2	204.1	221.3	222.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0

26	112.5	117.0	138.0	161.0	178.8	199.3	218.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	98.4	112.1	147.0	167.8	190.1	204.4	215.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	121.8	133.5	152.3	165.7	192.7	206.5	214.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	122.0	131.0	140.3	162.0	192.0	210.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	118.5	129.0	137.8	160.9	185.8	207.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	119.2	128.0	134.0	152.8	179.5	202.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	118.9	122.0	127.0	141.9	171.1	200.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	119.9	121.0	150.5	164.9	181.9	201.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	121.0	116.8	146.8	160.1	199.2	201.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	108.7	121.7	152.3	163.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	113.1	137.3	192.4	191.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	131.3	153.3	186.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	144.3	165.1	185.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	151.1	170.7	187.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	165.3	187.9	188.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	179.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE GWMI(I,J) GROUNDWATER DEMAND OF NON-ARKANSAS CELLS IN MGD

	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	2.8	2.8	2.8	2.8	2.8	2.8	2.8	0.1	0.1	0.0	0.1	0.3
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

+	45	46	47	48	49	50	51	52
2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
5	0.3	0.3	0.3	0.1	0.1	0.1	0.3	0.0
6	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.0
7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
9	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
11	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
12	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
13	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
14	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0

TABLE HYCN(I,J) HYDRAULIC CONDUCTIVITY IN FT PER DAY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	300.1
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	298.2
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	298.2	298.2
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	298.2	298.2	298.2
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	299.9	299.9	298.2	298.2	298.2
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	400.0	400.0	400.0	299.9	299.9	299.9	299.9	299.9
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	400.0	400.0	400.0	400.0	299.9	299.9	299.9	299.9
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	400.0	400.0	400.0	400.0	299.9	299.9	299.9	299.9
40	0.0	0.0	0.0	0.0	300.0	300.0	299.9	299.9	299.9	299.9	299.9	299.9	449.8	299.9	299.9
41	0.0	0.0	0.0	0.0	228.0	228.0	228.0	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9
42	0.0	0.0	228.0	228.0	228.0	228.0	228.0	228.0	228.0	228.0	299.9	299.9	299.9	299.9	299.9
43	0.0	228.0	228.0	228.0	228.0	228.0	228.0	228.0	228.0	228.0	228.0	299.9	299.9	299.9	299.9
44	0.0	291.8	291.8	291.8	228.0	228.0	228.0	228.0	228.0	228.0	228.0	299.9	299.9	299.9	299.9
45	0.0	0.0	291.8	291.8	228.0	228.0	228.0	228.0	228.0	228.0	228.0	228.0	299.9	299.9	299.9
46	0.0	0.0	291.8	291.8	291.8	300.0	300.0	228.0	228.0	228.0	228.0	228.0	131.3	173.0	224.9
47	0.0	0.0	291.8	291.8	291.8	291.8	300.0	300.0	228.0	228.0	228.0	228.0	117.7	117.7	117.7
48	0.0	0.0	0.0	291.8	291.8	291.8	228.0	228.0	300.0	300.0	500.0	350.0	350.0	390.0	118.8
49	0.0	0.0	0.0	291.8	291.8	291.8	291.8	300.0	300.0	300.0	300.0	300.0	300.0	299.0	133.1
50	0.0	0.0	0.0	291.8	291.8	291.8	291.8	228.0	228.0	228.0	228.0	228.0	228.0	228.0	228.0
51	0.0	0.0	0.0	291.8	291.8	291.8	291.8	228.0	228.0	228.0	228.0	228.0	228.0	228.0	228.0

52	0.0	0.0	0.0	0.0	291.8	291.8	291.8	228.0	228.0	228.0	228.0	228.0	228.0	228.0	228.0
53	0.0	0.0	0.0	0.0	291.8	291.8	291.8	291.8	228.0	228.0	228.0	228.0	228.0	350.0	228.0
54	0.0	0.0	0.0	0.0	0.0	291.8	291.8	291.8	228.0	228.0	228.0	228.0	228.0	228.0	228.0
55	0.0	0.0	0.0	0.0	0.0	0.0	291.8	291.8	291.8	228.0	228.0	228.0	228.0	228.0	228.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	291.8	291.8	228.0	228.0	228.0	228.0	228.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	291.8	291.8	228.0	228.0	228.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	291.8	291.8	228.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	291.8	100.0

+	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	500.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	500.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	500.0	500.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	500.0	500.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	500.0	500.0	500.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	304.0	304.0	304.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	304.0	304.0	304.0	304.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	304.0	304.0	304.0	304.0	304.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	304.0	304.0	304.0	304.0	304.0	307.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	304.0	304.0	304.0	300.1	300.1	307.0	307.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	304.0	304.0	300.1	300.1	307.0	307.0	307.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	304.0	304.0	304.0	300.1	307.0	307.0	307.0	307.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	304.0	304.0	300.1	300.1	307.0	307.0	307.0	307.0
14	0.0	0.0	0.0	0.0	0.0	0.0	304.0	304.0	304.0	300.1	300.1	307.0	307.0	307.0	307.0
15	0.0	0.0	0.0	0.0	0.0	304.0	304.0	304.0	300.1	300.1	300.1	307.0	307.0	307.0	300.0
16	0.0	0.0	0.0	0.0	304.0	304.0	304.0	300.1	300.1	300.1	307.0	307.0	307.0	307.0	300.0
17	0.0	0.0	0.0	0.0	304.0	304.0	304.0	300.1	300.1	307.0	307.0	307.0	307.0	300.0	300.0
18	0.0	0.0	0.0	0.0	304.0	304.0	300.1	300.1	307.0	307.0	307.0	307.0	300.0	300.0	300.0
19	0.0	0.0	0.0	304.0	304.0	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	300.0	300.0
20	0.0	0.0	304.0	304.0	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	400.0	400.0	400.0
21	0.0	0.0	304.0	304.0	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	400.0	400.0	400.0
22	300.1	300.1	300.1	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	307.0	400.0	400.0	400.0
23	300.1	300.1	300.1	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	305.5	400.0	400.0	400.0
24	300.1	300.1	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5
25	0.0	300.1	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	305.5
26	0.0	0.0	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	300.0
27	0.0	300.1	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	300.0
28	0.0	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	305.5	300.0
29	300.1	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	305.5	300.0
30	300.1	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	305.5	300.0
31	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	305.5	305.5	300.0
32	300.1	300.1	300.1	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	305.5	305.5	300.0
33	298.2	300.1	300.1	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	305.5	305.5	300.0
34	299.9	299.9	307.0	307.0	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	305.5	300.0	300.0
35	299.9	449.2	460.5	460.5	460.5	307.0	307.0	307.0	307.0	305.5	305.5	305.5	305.5	300.0	300.0
36	299.9	460.5	460.5	460.5	460.5	307.0	307.0	307.0	299.9	305.5	305.5	305.5	305.5	300.0	300.0
37	299.9	460.5	460.5	460.5	460.5	307.0	307.0	299.9	299.9	305.5	305.5	305.5	305.5	305.5	300.0
38	299.9	460.5	460.5	460.5	460.5	307.0	299.9	299.9	299.9	299.9	305.5	305.5	305.5	305.5	300.0
39	299.9	460.5	460.5	460.5	460.5	307.0	299.9	299.9	299.9	299.9	305.5	305.5	305.5	305.5	300.0
40	299.9	299.9	460.5	460.5	460.5	307.0	299.9	299.9	299.9	299.9	299.9	305.5	305.5	305.5	299.4
41	299.9	449.8	460.5	460.5	460.5	307.0	299.9	299.9	299.9	299.9	299.9	305.5	305.5	305.5	305.5
42	299.9	449.8	460.5	460.5	460.5	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	305.5	305.5
43	298.9	299.9	307.0	307.0	307.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	305.5
44	299.9	299.9	299.9	307.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9
45	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9
46	224.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9
47	171.8	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9
48	118.8	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	389.9	389.9
49	224.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	389.9	389.9	299.9	299.9	389.9	389.9
50	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9
51	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9
52	228.0	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9
53	228.0	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9
54	228.0	228.0	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9
55	228.0	228.0	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	0.0
56	228.0	228.0	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	0.0	0.0
57	228.0	228.0	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	0.0	0.0
58	228.0	228.0	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	0.0	0.0	0.0
59	100.0	100.0	228.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	0.0	0.0	0.0
60	0.0	100.0	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	299.9	0.0	0.0	0.0
61	0.0	0.0	291.8	291.8	291.8	291.8	299.9	299.9	299.9	299.9	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	291.8	291.8	299.9	299.9	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	299.9	299.9	299.9	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	299.9	299.9	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	299.9	299.9	299.9	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	299.9	299.9	0.0	0.0	0.0	0.0	0.0	0.0

+	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0
2	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0
3	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0	500.0
4	500.0	500.0	500.0	500.0	307.0	307.0	307.0	307.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4
5	500.0	500.0	500.0	307.0	307.0	307.0	300.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4
6	304.0	304.0	307.0	307.0	307.0	300.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4
7	304.0	307.0	307.0	307.0	307.0	300.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4
8	307.0	307.0	307.0	307.0	300.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
9	307.0	307.0	307.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
10	307.0	307.0	300.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
11	307.0	300.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
12	307.0	300.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
13	300.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
14	300.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
15	300.0	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
16	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
17	300.0	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
18	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
19	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
20	400.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
21	400.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0
22	400.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4

23	400.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
24	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
25	300.0	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4
26	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0
27	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0
28	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0
29	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0
30	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0
31	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0
32	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0
33	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0
34	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0
35	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0	0.0	0.0
36	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0	0.0	0.0
37	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0	0.0	0.0	0.0
38	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0	0.0	0.0	0.0
39	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0	0.0	0.0	0.0
40	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0	0.0	0.0	0.0
41	299.4	299.4	299.4	299.4	299.4	299.4	299.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	305.5	299.4	299.4	299.4	299.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	305.5	299.4	299.4	299.4	299.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	300.0	299.4	299.4	0.0	299.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	300.0	299.4	299.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	299.9	300.0	299.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	299.9	300.0	299.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	399.9	399.9	300.0	299.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	399.9	399.9	299.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	299.9	299.9	299.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	299.9	299.9	299.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	299.9	299.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	46	47	48	49	50	51	52
1	500.0	500.0	500.0	500.0	500.0	500.0	0.0
2	500.0	500.0	500.0	500.0	500.0	500.0	0.0
3	500.0	500.0	500.0	500.0	500.0	500.0	0.0
4	299.4	299.4	299.4	299.4	299.4	299.4	0.0
5	299.4	299.4	299.4	299.4	299.4	299.4	0.0
6	299.4	299.4	299.4	299.4	299.4	299.4	0.0
7	299.4	299.4	299.4	299.4	299.4	299.4	0.0
8	299.4	299.4	299.4	299.4	299.4	299.4	0.0
9	299.4	299.4	299.4	299.4	0.0	0.0	0.0
10	299.4	299.4	299.4	299.4	299.4	0.0	0.0
11	299.4	299.4	299.4	299.4	299.4	0.0	0.0
12	299.4	299.4	299.4	299.4	299.4	0.0	0.0
13	299.4	299.4	299.4	299.4	0.0	0.0	0.0
14	299.4	299.4	299.4	0.0	0.0	0.0	0.0
15	299.4	299.4	299.4	299.4	0.0	0.0	0.0
16	299.4	299.4	299.4	299.4	299.4	0.0	0.0
17	299.4	299.4	299.4	0.0	0.0	0.0	0.0
18	299.4	299.4	299.4	299.4	0.0	0.0	0.0
19	299.4	299.4	299.4	0.0	0.0	0.0	0.0
20	299.4	299.4	0.0	0.0	0.0	0.0	0.0

TABLE IRIV(I,J) RIVER INDICATOR ARRAY

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	3
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	3
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	3
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0
32	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	5	0	3	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	5	5	0	3	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	3	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	3	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	3	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	3	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	3	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	3	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	3	0	0	0
42	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	5	0	3	0	0	0
43	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	5	0	3	0	0	0
44	0	7	7	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	3	0	0	0
45	0	0	7	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0	0	0
46	0	0	7	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	5	0	0	0
47	0	0	7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5	5	0	0
48	0	0	0	7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0
49	0	0	0	7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0	0
50	0	0	0	7	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5	0
51	0	0	0	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5
52	0	0	0	0	7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
53	0	0	0	0	7	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
54	0	0	0	0	0	7	7	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	7	7	0	0	0	0	0	1	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	7	7	0	0	0	0	1	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	1	0	0	0	0	0	0

58	0	0	0	0	0	0	0	0	0	0	0	0	7	7	0	0	1	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	7	7	0	0	0	0	9
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	9
61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	7	7	0
62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7

+	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	10	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	10	0	0	0	0	0
3	0	0	0	0	0	0	5	0	0	0	0	0	5	0	0	0	0	10	0	0	0	0
4	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	0	10	0	0	0	0
5	0	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	0	0	10	0	0	0
6	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0	10	0	0
7	0	0	0	0	0	5	0	5	5	0	0	0	0	0	0	0	0	0	10	0	0	0
8	0	0	0	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	10	0	0	5
9	0	0	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	5
10	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	5	0
11	0	5	0	0	0	0	3	0	0	0	0	0	0	0	0	0	10	0	0	5	0	0
12	5	0	0	0	0	0	3	0	0	0	0	0	0	0	0	10	0	0	0	5	0	0
13	5	0	0	0	0	3	0	0	0	0	0	0	0	0	10	0	0	0	5	0	0	0
14	0	0	0	0	3	0	0	0	0	0	0	0	0	10	0	0	0	0	5	0	0	0
15	0	0	0	0	3	0	0	0	0	0	0	0	0	10	0	0	0	0	5	0	0	0
16	0	0	0	0	3	0	0	0	0	0	0	0	0	10	0	0	0	0	5	0	0	0
17	0	0	0	0	3	0	0	0	0	0	0	0	10	0	0	0	0	0	5	0	0	0
18	0	0	0	3	0	0	0	0	0	0	0	0	10	0	0	0	0	0	5	0	0	0
19	0	0	3	0	0	0	0	0	0	0	0	0	0	11	0	0	0	5	0	0	0	0
20	0	0	3	0	0	0	0	0	0	0	0	0	0	11	0	0	5	0	0	0	0	0
21	0	3	0	0	0	0	0	0	0	0	0	0	11	0	0	5	0	0	0	0	0	15
22	0	3	0	0	0	0	0	0	0	0	0	0	11	0	5	0	0	0	0	0	0	0
23	0	3	0	0	0	0	0	0	0	0	0	0	11	5	0	0	0	0	0	0	0	0
24	3	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	15
26	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	15	0
27	0	0	0	0	0	0	4	0	0	0	0	12	12	0	0	0	0	0	0	0	15	0
28	0	0	0	0	0	4	0	0	0	0	12	0	0	0	0	0	0	0	0	0	15	0
29	0	0	0	0	0	4	0	0	0	0	12	0	0	0	0	0	0	0	0	15	0	0
30	0	0	0	0	4	0	0	0	0	0	12	0	0	0	0	0	0	0	0	15	0	0
31	0	0	0	0	4	0	0	0	0	0	12	0	0	0	0	0	0	0	0	15	0	0
32	0	0	0	0	4	0	0	0	13	13	0	0	0	0	0	0	0	0	0	15	0	0
33	0	0	0	0	4	0	0	0	13	0	0	0	0	0	0	0	0	0	0	15	0	0
34	0	0	0	0	4	0	0	0	13	0	0	0	0	0	0	0	0	0	15	15	0	0
35	0	0	0	0	4	0	0	0	13	0	0	0	0	0	0	0	0	15	0	0	0	0
36	0	0	0	0	4	0	0	0	13	0	0	0	0	0	0	0	0	15	0	0	0	0
37	0	0	0	0	4	0	0	0	13	0	0	0	0	0	0	0	15	0	0	0	0	0
38	0	0	0	0	4	0	0	0	13	13	0	0	0	0	0	0	15	0	0	0	0	0
39	0	0	0	0	0	4	0	0	0	13	0	0	0	0	0	0	15	0	0	0	0	0
40	0	0	0	0	0	4	0	0	0	13	0	0	0	0	0	15	15	0	0	0	0	0
41	0	0	0	0	0	0	4	0	0	13	0	0	0	15	15	0	0	0	0	0	0	0
42	0	0	0	0	0	0	4	0	0	13	0	0	15	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	4	4	0	13	15	15	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	13	15	0	15	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	13	15	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0
52	9	0	0	0	0	0	0	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0
53	0	9	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	9	0	0	0	0	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	9	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	9	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	9	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	9	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61	9	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62	7	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
63	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
64	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
66	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

+	45	46	47	48	49	50	51	52
2	0	0	0	5	0	0	14	0
3	0	0	5	0	0	0	14	0
4	0	5	0	0	0	0	14	0
5	0	5	0	0	0	0	14	0
6	5	0	0	0	0	0	14	0
7	5	0	0	0	0	0	14	0
8	0	0	0	0	0	14	14	0
9	0	0	0	0	14	0	0	0
10	0	0	0	0	0	14	0	0
11	0	0	0	0	0	14	0	0
12	0	0	0	0	14	14	0	0
13	0	0	0	0	14	0	0	0
14	0	0	0	14	0	0	0	0
15	0	0	0	0	15	0	0	0
16	0	0	0	15	15	15	0	0
17	0	0	0	15	0	0	0	0
18	0	0	0	0	15	0	0	0
19	0	0	0	15	0	0	0	0
20	15	15	15	0	0	0	0	0
22	15	0	0	0	0	0	0	0
23	15	0	0	0	0	0	0	0
24	15	0	0	0	0	0	0	0
25	15	0	0	0	0	0	0	0

TABLE OINF(I,J) OVERLAND INFLOW IN CUBIC FT PER SEC

	1	2	3	4	5	6	7	8	9	10	11	12	13
43	0.0	0.0	0.0	0.0	0.0	98.0	98.0	0.0	0.0	0.0	0.0	0.0	0.0
44	0.0	0.0	18.0	0.0	0.0	0.0	0.0	98.0	0.0	0.0	0.0	0.0	0.0
45	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	98.0	0.0	0.0	0.0	0.0
46	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	0.0	0.0	0.0
47	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	0.0	0.0
48	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	0.0
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0	0.0
50	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0
51	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0
53	0.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	18.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	18.0	18.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	18.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	18.0	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0

+	14	15	16	17	18	19	20	21	22	23	24	25	26
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0	268.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0	70.0
19	0.0	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0	70.0	0.0
20	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0	0.0	70.0	0.0
21	0.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0	70.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70.0	0.0	0.0
23	0.0	0.0	849.0	849.0	849.0	849.0	0.0	0.0	0.0	0.0	70.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	849.0	0.0	0.0	0.0	70.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	849.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0	0.0	849.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	849.0	0.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0
28	0.0	0.0	0.0	0.0	849.0	0.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0
29	0.0	0.0	0.0	849.0	0.0	0.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	849.0	0.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	849.0	0.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	0.0	0.0	849.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0
33	688.0	689.0	0.0	0.0	553.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.0	0.0	0.0	0.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0
35	0.0	0.0	0.0	427.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.0	0.0	427.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	0.0	0.0	427.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	0.0	0.0	427.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	0.0	0.0	427.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	0.0	0.0	427.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	0.0	0.0	427.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	0.0	0.0	0.0	427.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	0.0	0.0	0.0	427.0	0.0	77.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	0.0	0.0	0.0	0.0	427.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.0	0.0	0.0	0.0	0.0	427.0	427.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0	0.0	0.0	0.0	0.0
49	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0	0.0	0.0	0.0
51	98.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0	0.0
53	98.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0
54	98.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0
55	98.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0
56	0.0	98.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0
57	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0
58	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0	0.0
59	18.0	18.0	18.0	18.0	0.0	0.0	0.0	0.0	427.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	438.0	0.0	0.0	0.0	2708.0
61	0.0	0.0	0.0	0.0	18.0	18.0	18.0	18.0	0.0	0.0	2708.0	2708.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	18.0	0.0	2708.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	0.0	2708.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	2708.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.0	0.0	2708.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2714.0	0.0	0.0

+	27	28	29	30	31	32	33	34	35	36	37	38	39
3	0.0	0.0	268.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	268.0	0.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	268.0	0.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	268.0	0.0	0.0	268.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	268.0	0.0	268.0	268.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	268.0	268.0	268.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	268.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.0
12	0.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.0	0.0	0.0
14	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.0	0.0	0.0	0.0
15	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.0	0.0	0.0	0.0
16	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.0	0.0	0.0	0.0
17	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	553.0	0.0	0.0	154.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	553.0	0.0	0.0	154.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	553.0	0.0	156.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	553.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	556.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	205.0	205.0	0.0	0.0	0.0	0.0

28	0.0	42.0	0.0	0.0	0.0	0.0	205.0	0.0	0.0	0.0	0.0	0.0	0.0
29	0.0	42.0	0.0	0.0	0.0	0.0	205.0	0.0	0.0	0.0	0.0	0.0	0.0
30	42.0	0.0	0.0	0.0	0.0	0.0	208.0	0.0	0.0	0.0	0.0	0.0	0.0
31	42.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	42.0	0.0	0.0	0.0	236.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	42.0	0.0	0.0	0.0	236.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	42.0	0.0	0.0	0.0	236.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	42.0	0.0	0.0	0.0	236.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	42.0	0.0	0.0	0.0	236.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	42.0	0.0	0.0	0.0	236.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0
38	42.0	0.0	0.0	0.0	236.0	236.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0
39	0.0	42.0	0.0	0.0	0.0	236.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0
40	0.0	42.0	0.0	0.0	0.0	236.0	0.0	0.0	0.0	0.0	0.0	543.0	543.0
41	0.0	0.0	42.0	0.0	0.0	236.0	0.0	0.0	0.0	543.0	543.0	0.0	0.0
42	0.0	0.0	42.0	0.0	0.0	42.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0
43	0.0	0.0	0.0	45.0	0.0	0.0	236.0	543.0	543.0	0.0	0.0	0.0	0.0
44	0.0	0.0	0.0	0.0	0.0	246.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	2708.0	0.0	0.0	0.0	0.0	0.0	0.0
51	0.0	0.0	0.0	0.0	0.0	0.0	2708.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	2708.0	2708.0	2708.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	0.0	0.0	0.0	2708.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	2708.0	2708.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	0.0	0.0	2708.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	2708.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	2708.0	2708.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	2708.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	2708.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	2708.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	40	41	42	43	44	45	46	47	48	49	50	51	52
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0
4	95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0
5	0.0	95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0
7	0.0	95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	543.0	0.0
9	95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	543.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0
16	0.0	154.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	543.0	543.0	0.0	0.0
17	0.0	154.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0
18	0.0	154.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0
19	154.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	543.0	543.0	543.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	543.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	0.0	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.0	0.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.0	543.0	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	543.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE RIVC(I,J) RIVER CONDUCTANCE IN FT**2 PER DAY

	1	2	3	4	5	6	7	8	9	10
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5000.00	13599.57
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7500.00	13599.57
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10000.00	17000.00
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75000.00	17000.00	17000.00
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30000.00	25000.00	7500.00
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20000.00	10000.00	7500.00
40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10000.00	2500.00	2500.00
41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2500.00	2500.00	2500.00
42	0.0	0.0	50.00	50.00	15000.00	10000.00	5000.00	5000.00	2500.00	2500.00
43	0.0	7853.53	7853.53	7853.53	10000.00	15000.00	15000.00	2500.00	2500.00	2500.00
44	0.0	350000.00	350000.00	28000.00	10000.00	10000.00	10000.00	4000.00	2500.00	2500.00
45	0.0	0.0	350000.00	28000.00	23000.00	23000.00	10000.00	7853.53	8000.00	2500.00
46	0.0	0.0	350000.00	28000.00	28000.00	30000.00	10000.00	7853.53	8000.00	8000.00
47	0.0	0.0	500000.00	28000.00	28000.00	28000.00	10000.00	7853.53	15000.00	8000.00
48	0.0	0.0	0.0	500000.00	22606.02	22606.02	10000.00	7853.53	12000.00	15000.00
49	0.0	0.0	0.0	500000.00	22606.02	22606.02	22606.02	7853.53	7853.53	12000.00
50	0.0	0.0	0.0	500000.00	22606.02	22606.02	22606.02	7853.53	7853.53	7853.53
51	0.0	0.0	0.0	350000.00	22606.02	22606.02	22606.02	7853.53	7853.53	7853.53
52	0.0	0.0	0.0	0.0	350000.00	22606.02	22606.02	7853.53	7853.53	7853.53
53	0.0	0.0	0.0	0.0	350000.00	22606.02	22606.02	22606.02	7853.53	7853.53
54	0.0	0.0	0.0	0.0	0.0	500000.00	500000.00	22606.02	7853.53	7853.53
55	0.0	0.0	0.0	0.0	0.0	0.0	500000.00	500000.00	22606.02	7853.53
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	500000.00	500000.00

+	11	12	13	14	15	16	17	18	19	20
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15532.06
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15532.05
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15532.06

19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15532.06	11555.59
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15532.06	11555.59	16449.48
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15532.06	11555.59	16449.48
22	0.0	0.0	0.0	0.0	5000.00	6000.00	12000.00	11555.59	6000.00	6000.00
23	0.0	0.0	0.0	0.0	0.0	5000.00	5000.00	5000.00	150000.00	6000.00
24	0.0	0.0	0.0	0.0	0.0	6000.00	6000.00	6000.00	150000.00	8000.00
25	0.0	0.0	0.0	0.0	0.0	0.0	5000.00	6000.00	174747.19	6000.00
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16449.48	174747.19	16449.48
27	0.0	0.0	0.0	0.0	0.0	0.0	16449.48	150000.00	16449.48	16449.48
28	0.0	0.0	0.0	0.0	0.0	0.0	16449.48	150000.00	16449.48	12983.57
29	0.0	0.0	0.0	0.0	0.0	16449.48	174747.19	16449.48	16449.48	12983.57
30	0.0	0.0	0.0	0.0	9108.87	16449.48	174747.19	16449.48	16449.48	12983.57
31	0.0	0.0	0.0	9108.87	9108.87	16449.48	174747.19	16449.48	12983.57	12983.57
32	0.0	0.0	10597.78	9108.87	9108.87	16449.48	16449.48	174747.19	12983.57	57121.03
33	13599.67	13599.67	9108.87	8000.00	8000.00	8000.00	174747.19	174747.19	12983.57	57121.03
34	13599.67	13599.67	678.98	678.98	678.98	678.98	18000.00	12983.57	12983.57	5
35	13599.67	2500.00	1800.00	1800.00	1800.00	2500.00	20000.00	30000.00	120000.00	30000.00
36	2500.00	2500.00	1800.00	1800.00	2500.00	18000.00	30000.00	30000.00	120000.00	30000.00
37	1800.00	2500.00	1800.00	1800.00	2500.00	18000.00	30000.00	30000.00	120000.00	30000.00
38	2500.00	2500.00	2500.00	1800.00	1800.00	18000.00	30000.00	30000.00	120000.00	30000.00
39	3000.00	2500.00	2500.00	1800.00	1800.00	10000.00	30000.00	30000.00	120000.00	30000.00
40	2500.00	2500.00	2500.00	1800.00	1800.00	10000.00	20000.00	120000.00	30000.00	30000.00
41	1800.00	1800.00	1800.00	2000.00	1800.00	10000.00	20000.00	30000.00	120000.00	30000.00
42	1800.00	1800.00	1800.00	2000.00	1800.00	2000.00	15000.00	30000.00	120000.00	30000.00
43	2500.00	40.00	10.00	10.00	10.00	40.00	13000.00	12983.57	70000.00	12983.57
44	2500.00	40.00	40.00	10.00	10.00	40.00	40.00	13000.00	70000.00	13599.67
45	2500.00	395.00	40.00	10.00	10.00	40.00	40.00	40.00	13000.00	13599.67
46	4000.00	4000.00	40.00	10.00	10.00	10.00	40.00	40.00	13000.00	13599.67
47	15000.00	7000.00	40.00	10.00	10.00	10.00	40.00	40.00	13000.00	13000.00
48	15000.00	15000.00	40.00	40.00	10.00	10.00	40.00	40.00	40.00	13000.00
49	12000.00	15000.00	40.00	40.00	40.00	10.00	40.00	40.00	2500.00	13000.00
50	12000.00	12000.00	15000.00	40.00	40.00	10.00	40.00	40.00	2500.00	2500.00
51	7853.53	7853.53	7853.53	15000.00	40.00	40.00	40.00	40.00	40.00	2500.00
52	7853.53	7853.53	15000.00	40.00	40.00	40.00	40.00	40.00	40.00	2500.00
53	7853.53	7853.53	7853.53	15000.00	40.00	40.00	40.00	40.00	40.00	2500.00
54	7853.53	7853.53	7853.53	15000.00	40.00	40.00	40.00	40.00	40.00	2500.00
55	7853.53	7853.53	7853.53	15000.00	40.00	40.00	40.00	40.00	40.00	40.00
56	7853.53	7853.53	7853.53	7853.53	15000.00	40.00	40.00	40.00	40.00	40.00
57	500000.00	500000.00	7853.53	7853.53	7853.53	15000.00	20.00	20.00	40.00	40.00
58	0.0	0.0	500000.00	500000.00	7853.53	7853.53	15000.00	20.00	40.00	40.00
59	0.0	0.0	0.0	100000.00	100000.00	100000.00	100000.00	20.00	40.00	40.00
60	0.0	0.0	0.0	0.0	0.0	0.0	100000.00	40.00	40.00	40.00
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100000.00	500000.00	500000.00

+	21	22	23	24	25	26	27	28	29	30
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7500.00
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1555.59	7500.00
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1555.59	15532.06
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7500.00	11555.59	15532.06
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15532.06	11555.59	15532.06
7	0.0	0.0	0.0	0.0	0.0	0.0	15532.06	11555.59	15532.06	11556.68
8	0.0	0.0	0.0	0.0	0.0	11555.59	11555.59	11555.59	11555.59	15532.06
9	0.0	0.0	0.0	0.0	11555.59	11555.59	11555.59	15532.06	15532.06	12983.57
10	0.0	0.0	0.0	15532.06	11555.59	15532.06	16449.48	16449.48	12983.57	12983.57
11	0.0	0.0	0.0	57778.43	15532.06	16449.48	16449.48	12983.57	57121.03	12983.57
12	0.0	0.0	57778.43	15532.06	15532.06	16449.48	12983.57	12983.57	57121.03	12983.57
13	0.0	0.0	57778.43	15532.06	16449.48	16449.48	12983.57	57121.03	12983.57	12983.57
14	0.0	57778.43	15532.06	15532.06	16449.48	16449.48	57121.03	12983.57	12983.57	12983.57
15	15532.06	57778.43	15532.06	16449.48	16449.48	16449.48	57121.03	12983.57	12983.57	0.0
16	57778.43	15532.06	16449.48	16449.48	16449.48	12983.57	57121.03	12983.57	12983.57	0.0
17	57778.43	15532.06	16449.48	16449.48	12983.57	12983.57	57121.03	12983.57	0.0	0.0
18	57778.43	16449.48	16449.48	12983.57	12983.57	57121.03	6000.00	0.0	0.0	0.0
19	16449.48	16449.48	16449.48	12983.57	57121.03	6000.00	6000.00	6000.00	0.0	0.0
20	16449.48	16449.48	12983.57	12983.57	57121.03	6000.00	6000.00	6000.00	6000.00	0.0
21	16449.48	16449.48	12983.57	57121.03	12983.57	6000.00	6000.00	6000.00	10000.00	10000.00
22	16449.48	12983.57	12983.57	57121.03	12983.57	6000.00	5000.00	6000.00	6000.00	8000.00
23	16449.48	12983.57	12983.57	57121.03	12983.57	6000.00	6000.00	6000.00	6000.00	3000.00
24	12983.57	12983.57	57121.03	12983.57	6000.00	6000.00	6000.00	6000.00	5000.00	3000.00
25	12983.57	57121.03	12983.57	6000.00	6000.00	6000.00	6000.00	6000.00	3000.00	3000.00
26	12983.57	57121.03	12983.57	6000.00	6000.00	6000.00	6000.00	6000.00	6000.00	0.0
27	12983.57	57121.03	12983.57	6000.00	6000.00	6000.00	4000.00	4000.00	5000.00	0.0
28	12983.57	57121.03	8000.00	8000.00	4000.00	4000.00	4000.00	7000.00	4000.00	0.0
29	12983.57	57121.03	8000.00	8000.00	4000.00	4000.00	4000.00	7000.00	4000.00	0.0
30	57121.03	12983.57	8000.00	8000.00	4000.00	4000.00	7000.00	4000.00	4000.00	0.0
31	57121.03	12983.57	8000.00	4000.00	4000.00	4000.00	13000.00	4000.00	4000.00	0.0
32	12983.57	12983.57	8000.00	4000.00	4000.00	4000.00	13000.00	4000.00	4000.00	0.0
33	12983.57	12983.57	8000.00	4000.00	4000.00	4000.00	13000.00	4000.00	4000.00	0.0
34	12983.57	12983.57	8000.00	4000.00	4000.00	4000.00	13000.00	4000.00	0.0	0.0
35	12983.57	12983.57	8000.00	8000.00	4000.00	4000.00	13000.00	4000.00	0.0	0.0
36	12983.57	12983.57	8000.00	340.00	4000.00	4000.00	10000.00	4000.00	0.0	0.0
37	12983.57	12983.57	340.00	340.00	4000.00	4000.00	10000.00	4000.00	4000.00	0.0
38	12983.57	340.00	340.00	340.00	340.00	4000.00	10000.00	4000.00	4000.00	0.0
39	12983.57	340.00	340.00	340.00	340.00	4000.00	4000.00	10000.00	4000.00	0.0
40	12983.57	340.84	340.84	340.84	340.84	340.84	4000.00	10000.00	4000.00	3000.00
41	12983.57	340.84	340.84	340.84	340.84	340.84	4000.00	4000.00	10000.00	4000.00
42	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	10000.00	4000.00
43	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	10000.00
44	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67
45	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67
46	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67
47	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	7000.00	7000.00
48	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	5000.00	5000.00	5000.00
49	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	2500.00	2500.00	2500.00
50	13000.00	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67	13599.67
51	2500.00	13000.00	13599.67	13599.67	13599.67	4500.00	4500.00	4500.00	13599.67	13599.67
52	2500.00	2500.00	13000.00	4500.00	4500.00	4500.00	4500.00	4500.00	13599.67	535912.75
53	2500.00	2500.00	2500.00	17256.80	4500.00	4500.00	4500.00	4500.00	13599.67	535912.75
54	2500.00	2500.00	2500.00	17256.80	4500.00	4500.00	4500.00	4500.00	535912.75	535912.75
55	40.00	40.00	40.00	17256.80	4500.00	4500.00	4500.00	4500.00	535912.75	0.0
56	40.00	40.00	40.00	34513.61	13599.67	13599.67	4500.00	535912.75	0.0	0.0

57	40.00	40.00	40.00	34513.61	13599.67	13599.67	535912.75	535912.75	0.0	0.0
58	40.00	40.00	34513.61	13599.67	13599.67	13599.67	535912.75	0.0	0.0	0.0
59	40.00	34513.61	13599.67	13599.67	13599.67	13599.67	535912.75	0.0	0.0	0.0
60	40.00	34513.61	13599.67	13599.67	13599.67	535912.75	535912.75	0.0	0.0	0.0
61	500000.00	13599.67	34513.61	535912.75	535912.75	0.0	0.0	0.0	0.0	0.0
62	0.0	500000.00	500000.00	13599.67	535912.75	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	13599.67	13599.67	535912.75	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	13599.67	535912.75	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	13599.67	13599.67	535912.75	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	535912.75	535912.75	0.0	0.0	0.0	0.0	0.0	0.0

+	31	32	33	34	35	36	37	38	39	40
2	15532.06	15532.06	15532.06	15532.06	15532.06	11555.89	12983.57	12983.57	80000.00	7110.77
3	15532.06	15532.06	15532.06	15532.06	11555.89	12983.57	12983.57	12983.57	0.0	180209.25
4	15532.06	15532.06	15532.06	11555.89	12983.57	12983.57	12983.57	12983.57	0.0	180209.25
5	15532.06	15532.06	11555.89	12983.57	12983.57	12983.57	0.0	0.0	0.0	7110.77
6	15532.06	11555.89	12983.57	12983.57	12983.57	0.0	0.0	0.0	7110.77	7110.77
7	11555.89	12983.57	12983.57	12983.57	12983.57	0.0	0.0	0.0	7110.77	7110.77
8	12983.57	12983.57	12983.57	12983.57	0.0	0.0	0.0	7110.77	7110.77	7110.77
9	12983.57	12983.57	12983.57	0.0	0.0	7110.77	7110.77	7110.77	7110.77	180209.25
10	12983.57	12983.57	0.0	0.0	0.0	7110.77	7110.77	7110.77	180209.25	7110.77
11	12983.57	0.0	0.0	0.0	7110.77	7110.77	7110.77	7110.77	180209.25	7110.77
12	12983.57	0.0	0.0	0.0	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77
13	0.0	0.0	0.0	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77
14	0.0	0.0	0.0	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77
15	0.0	0.0	0.0	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77
16	0.0	0.0	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77
17	0.0	0.0	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77
18	0.0	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77
19	7110.77	7110.77	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	180209.25
20	7110.77	7110.77	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	180209.25	7110.77
21	0.0	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	180209.25	7110.77	7110.77
22	0.0	7110.77	7110.77	7110.77	180209.25	7110.77	180209.25	7110.77	7110.77	7110.77
23	0.0	7110.77	7110.77	7110.77	80000.00	80000.00	7110.77	7110.77	7110.77	7110.77
24	0.0	3000.00	7110.77	7110.77	80000.00	7110.77	7110.77	7110.77	7110.77	7110.77
25	0.0	3000.00	3000.00	3000.00	3000.00	80000.00	3000.00	3000.00	7110.77	7110.77
26	50.00	1000.00	1000.00	1000.00	15000.00	1000.00	1000.00	1000.00	3000.00	8000.00
27	50.00	1000.00	1000.00	15000.00	15000.00	1000.00	1000.00	1000.00	3000.00	8000.00
28	50.00	1000.00	15000.00	1000.00	1000.00	1000.00	1000.00	1000.00	3000.00	3000.00
29	50.00	1000.00	15000.00	1000.00	1000.00	1000.00	3000.00	3000.00	3000.00	3000.00
30	50.00	1000.00	15000.00	1000.00	1000.00	1000.00	3000.00	0.0	3000.00	3000.00
31	1000.00	1000.00	10000.00	1000.00	1000.00	3000.00	3000.00	3000.00	3000.00	3000.00
32	15000.00	15000.00	1000.00	1000.00	1000.00	3000.00	3000.00	3000.00	3000.00	3000.00
33	15000.00	1000.00	1000.00	1000.00	3000.00	7110.77	7110.77	7110.77	7110.77	7110.77
34	15000.00	1000.00	1000.00	1000.00	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77
35	15000.00	1000.00	3000.00	3000.00	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75
36	15000.00	1000.00	3000.00	3000.00	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75
37	15000.00	1000.00	3000.00	3000.00	7110.77	7110.77	7110.77	7110.77	535912.75	0.0
38	15000.00	15000.00	3000.00	3000.00	7110.77	7110.77	7110.77	7110.77	535912.75	0.0
39	3000.00	15000.00	3000.00	3000.00	3000.00	3000.00	3000.00	3000.00	535912.75	0.0
40	7110.77	15000.00	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75	535912.75	0.0
41	7110.77	15000.00	7110.77	7110.77	7110.77	535912.75	535912.75	0.0	0.0	0.0
42	4000.00	15000.00	7110.77	7110.77	535912.75	0.0	0.0	0.0	0.0	0.0
43	10000.00	7110.77	15000.00	535912.75	535912.75	0.0	0.0	0.0	0.0	0.0
44	0.0	15000.00	575000.00	0.0	575000.00	0.0	0.0	0.0	0.0	0.0
45	0.0	15000.00	575000.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	13599.67	0.0	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	7000.00	0.0	450000.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	5000.00	5000.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	2500.00	2500.00	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	13599.67	13599.67	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	13599.67	13599.67	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	535912.75	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	41	42	43	44	45	46	47	48	49	50
2	7110.77	0.0	7110.77	7110.77	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77
3	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77
4	7110.77	7110.77	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77
5	180209.25	7110.77	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77
6	7110.77	180209.25	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77
7	180209.25	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77
8	180209.25	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75
9	7110.77	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77	535912.75	0.0
10	7110.77	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75
11	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75
12	7110.77	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75	535912.75
13	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75	0.0
14	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75	0.0	0.0
15	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75	0.0
16	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75	535912.75	535912.75
17	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75	0.0	0.0
18	180209.25	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75	0.0
19	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	7110.77	535912.75	0.0	0.0
20	7110.77	7110.77	7110.77	7110.77	535912.75	535912.75	535912.75	0.0	0.0	0.0
21	7110.77	7110.77	7110.77	535912.75	0.0	0.0	0.0	0.0	0.0	0.0
22	7110.77	7110.77	7110.77	7110.77	535912.75	0.0	0.0	0.0	0.0	0.0
23	7110.77	7110.77	7110.77	7110.77	535912.75	0.0	0.0	0.0	0.0	0.0
24	7110.77	7110.77	7110.77	7110.77	535912.75	0.0	0.0	0.0	0.0	0.0
25	7110.77	7110.77	7110.77	535912.75	535912.75	0.0	0.0	0.0	0.0	0.0
26	8000.00	8000.00	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	8000.00	8000.00	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	8000.00	8000.00	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	8000.00	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	8000.00	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	7110.77	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	7110.77	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	7110.77	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	535912.75	535912.75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	51	52

2	535912.75	0.0
3	535912.75	0.0
4	535912.75	0.0
5	535912.75	0.0
6	535912.75	0.0
7	535912.75	0.0
8	535912.75	0.0

TABLE RCHL(I,J) 1982 LOWER LIMIT ON RECHARGE FOR CONSTANT HEAD CELLS IN CUBIC FT PER DAY

	23	24	25	26	27	28	29	30	31	32	33
1	0	0	0	0	0	0	0	198600	171200	157800	196100

+	34	35	36	37	38	39	40	41	42	43	44
1	257700	322000	238100	215700	228200	370400	438700	492800	0	558700	617500

+	45	46	47	48	49	50	51	52
1	668400	795500	1045900	1377400	1066800	1230500	1707800	0

TABLE RIVS(I,J) RIVER STAGE IN FT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237.5
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	208.7
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	222.5	207.2
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	205.2	203.1	200.2
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	228.1	212.0	206.0	197.3	189.3
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	230.8	215.7	207.7	204.6	205.6	196.8	190.8
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	224.1	212.2	200.0	200.9	202.3	197.3	191.8
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	216.2	202.0	192.9	196.4	197.1	193.2	189.2
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	209.2	207.9	203.9	201.4	194.1	187.6	183.4	184.4
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.8	218.7	221.9	224.6	200.0	194.1	192.8	186.7
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	228.4	227.0	241.4	231.4	203.6	201.2	199.6	192.4
40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	239.2	240.8	233.1	220.8	208.0	199.8	194.4	191.1
41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	236.7	227.7	221.4	220.1	213.7	206.4	198.7	189.4
42	0.0	0.0	234.7	231.9	228.2	248.2	238.0	229.9	230.1	225.8	223.4	221.2	221.3	214.3	204.9
43	0.0	+235.3	235.0	238.6	229.9	221.4	215.0	226.2	218.4	215.9	215.9	222.0	221.4	217.1	215.6
44	0.0	239.8	237.3	237.9	232.1	225.1	215.9	212.2	221.8	217.0	204.9	210.2	213.0	208.7	209.2
45	0.0	0.0	235.3	234.2	228.5	222.7	217.7	212.6	203.3	212.1	205.2	208.9	209.3	204.4	203.3
46	0.0	0.0	228.3	231.4	225.0	218.8	215.2	211.3	200.1	189.4	195.0	198.7	204.2	207.8	204.0
47	0.0	0.0	222.5	225.8	222.6	217.8	214.7	212.0	201.7	196.9	189.2	189.8	193.1	201.8	203.0
48	0.0	0.0	0.0	218.4	218.0	217.3	221.6	208.8	201.0	193.3	188.7	181.9	180.0	197.2	207.0
49	0.0	0.0	0.0	213.6	218.1	211.8	210.4	208.3	201.0	191.1	189.2	181.7	183.6	188.1	201.6
50	0.0	0.0	0.0	209.7	211.1	213.0	208.3	204.8	197.0	187.0	186.0	186.1	178.4	184.3	189.0
51	0.0	0.0	0.0	206.2	208.2	204.8	207.6	204.0	198.3	186.0	180.3	181.1	179.3	180.7	183.0
52	0.0	0.0	0.0	0.0	206.7	206.8	205.0	199.2	198.0	187.9	178.8	172.7	174.1	177.8	184.9
53	0.0	0.0	0.0	0.0	206.2	202.2	201.0	198.4	193.1	186.0	177.9	173.6	171.2	177.8	187.9
54	0.0	0.0	0.0	0.0	0.0	189.1	198.9	192.8	194.1	182.1	174.4	170.1	168.4	170.3	178.1
55	0.0	0.0	0.0	0.0	0.0	0.0	193.8	188.2	190.1	186.0	174.6	170.0	166.9	167.6	171.1
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	186.2	184.6	180.9	176.1	170.8	168.4	167.7
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	180.0	177.7	174.0	171.4	171.8
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	172.0	170.3	172.1
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	167.0	165.8

+	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	262.8
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	279.4	279.4
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	278.2	279.7
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.8	274.9	282.2
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	267.0	271.3	275.6
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	258.9	263.8	264.8	264.9
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	254.0	257.0	261.7	262.8	267.3
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	252.1	253.0	255.4	264.1	266.8	270.8
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	251.2	252.3	250.1	265.6	263.0	262.7	267.2
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	248.1	253.3	259.7	262.2	259.8	256.2	260.1
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	243.8	252.4	254.4	257.4	258.4	254.3	252.1	262.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	243.4	251.4	255.1	255.8	253.4	248.1	253.2	262.1
14	0.0	0.0	0.0	0.0	0.0	0.0	238.7	243.8	250.1	254.6	255.1	247.1	245.0	257.2	277.7
15	0.0	0.0	0.0	0.0	0.0	232.9	233.0	242.8	248.1	251.4	251.1	244.2	243.8	250.0	0.0
16	0.0	0.0	0.0	0.0	237.3	227.9	238.3	244.0	248.1	247.8	244.9	238.9	241.1	242.0	0.0
17	0.0	0.0	0.0	0.0	229.2	224.3	235.9	241.9	242.9	245.3	238.4	235.6	244.9	0.0	0.0
18	0.0	0.0	0.0	0.0	221.6	227.3	237.7	237.6	239.8	235.7	232.7	241.3	0.0	0.0	0.0
19	0.0	0.0	0.0	218.4	220.6	238.1	236.0	237.2	238.2	230.8	236.0	241.9	247.6	0.0	0.0
20	0.0	0.0	221.0	221.3	228.6	234.3	234.9	234.2	228.6	229.4	233.9	234.6	241.3	248.4	0.0
21	0.0	0.0	220.2	221.1	230.6	232.3	231.6	227.7	223.7	231.2	228.9	230.8	238.7	239.3	239.3
22	229.5	224.2	215.9	222.0	228.0	227.9	228.9	220.0	223.1	225.8	224.7	238.1	237.8	237.2	236.8
23	224.7	219.4	213.1	214.9	222.1	224.9	220.8	217.4	221.7	224.4	227.2	233.7	234.7	236.9	235.2
24	221.7	215.1	211.0	209.0	217.9	222.7	215.5	215.8	221.8	220.4	228.1	232.4	232.1	238.2	247.8
25	0.0	208.4	207.7	204.4	209.9	215.3	209.1	215.0	218.9	220.0	228.2	230.3	229.7	238.0	238.2
26	0.0	0.0	205.0	201.6	209.3	212.8	206.3	210.6	215.0	218.4	223.2	228.2	227.9	233.2	0.0
27	0.0	201.5	199.0	198.0	205.6	211.1	204.8	208.3	213.1	217.4	222.3	228.2	224.8	234.1	0.0
28	0.0	202.4	198.1	201.8	207.4	208.9	202.0	210.1	211.0	215.3	218.1	222.1	223.0	241.9	0.0
29	207.1	195.1	194.8	205.7	206.4	203.6	199.4	207.3	210.0	217.3	215.8	219.3	224.3	247.3	0.0
30	202.7	194.2	195.7	206.0	208.4	198.9	203.8	204.8	210.6	215.2	215.1	215.8	225.0	248.6	0.0
31	197.0	192.8	201.7	204.9	199.9	195.2	201.9	208.8	211.7	212.0	214.1	213.8	224.8	233.9	0.0
32	190.7	186.3	195.6	196.9	188.9	193.9	195.6	204.2	208.8	208.8	209.2	209.1	220.6	228.1	0.0
33	186.9	186.4	190.4	191.2	186.9	194.2	195.0	204.7	206.2	205.2	204.6	205.4	217.7	235.2	0.0
34	187.2	184.2	189.6	191.0	191.7	198.4	191.7	196.7	203.7	202.2	203.4	203.2	221.4	0.0	0.0
35	186.6	180.1	183.2	181.8	192.8	193.7	187.4	198.0	201.0	200.8	203.4	202.2	218.7	0.0	0.0
36	176.1	177.4	174.1	173.8	188.7	190.8	188.7	201.8	201.2	199.3	198.8	198.3	212.7	0.0	0.0
37	178.8	172.2	168.6	173.0	181.9	184.3	193.0	200.4	199.4	199.9	196.2	194.7	206.1	250.3	0.0
38	177.8	174.7	165.6	170.3	177.4	180.0	191.3	196.2	196.8	197.7	199.4	192.2	203.9	231.7	0.0
39	177.6	175.9	163.9	163.6	169.3	179.9	186.1	194.0	194.9	195.7	198.2	197.0	192.6	219.3	0.0
40	184.2	174.4	163.7	160.3	168.1	179.2	180.7	189.7	195.0	193.6	195.7	199.0	187.1	207.2	209.8
41	181.3	169.7	165.9	181.8	167.4	176.8	181.6	181.4	189.6	186.2	193.4	193.8	195.9	182.2	184.9
42	193.1	172.9	172.6	162.9	173.9	177.8	180.0	176.9	180.4	188.1	192.4	193.2	199.1	188.3	175.9
43	207.8	179.7	169.2	157.4	173.3	174.4	178.7	176.1	173.0	175.2	186.7	191.3	197.8	206.	
44	207.1	201.0	177.4	161.2	169.9	173.0	176.0	175.7	171.0	168.8	176.7	190.7	194.9	211.8	204.3
45	204.8	204.4	175.0	158.9	169.1	170.2	170.2	172.8	176.3	170.1	171.3	180.9	191.1	200.0	200.1
46	200.1	197.7	185.0	163.2	168.3	168.6	168.0	169.0	174.4	172.8	172.8	173.9	186.3	201.0	201.9

47	197.0	193.4	191.8	181.3	168.2	164.2	154.5	154.1	165.7	171.8	177.3	179.4	185.0	192.0	200.2
48	200.0	198.8	197.6	187.8	164.3	161.2	152.6	159.8	163.0	168.2	176.1	186.8	188.8	179.0	183.6
49	197.3	192.4	194.2	190.4	164.3	164.9	154.7	156.2	158.0	165.1	172.5	176.1	188.8	180.2	182.6
50	198.8	183.7	189.7	184.3	167.2	161.7	153.4	158.4	155.2	158.4	171.2	170.7	159.0	156.6	159.9
51	194.0	193.6	186.3	185.8	184.0	183.2	169.7	160.9	152.8	155.9	158.3	159.3	157.2	160.4	182.8
52	186.0	188.0	187.0	185.7	176.3	179.0	178.2	163.8	159.3	151.1	149.3	149.5	153.7	161.1	158.4
53	184.7	182.0	183.0	179.1	180.4	173.2	178.1	173.2	156.2	149.7	147.0	148.3	153.9	157.2	157.4
54	182.0	175.2	181.9	174.1	176.9	173.8	171.9	172.3	157.9	149.0	146.9	149.9	155.8	155.6	158.5
55	178.6	173.6	178.3	180.7	181.8	172.9	170.0	166.3	152.9	148.8	150.8	151.6	156.2	155.2	0.0
56	174.9	171.2	172.1	178.4	175.0	173.8	167.9	159.0	146.6	143.9	147.2	150.9	151.0	0.0	0.0
57	167.9	168.8	172.3	169.6	164.2	170.7	159.0	151.8	143.0	144.2	148.2	146.4	152.4	0.0	0.0
58	171.8	163.7	166.6	167.4	160.2	164.4	163.8	142.7	144.1	143.2	145.6	145.3	0.0	0.0	0.0
59	166.5	161.0	168.7	166.2	157.8	164.4	160.3	151.7	144.2	141.7	143.1	142.2	0.0	0.0	0.0
60	0.0	166.8	163.0	163.0	161.4	157.7	144.4	147.8	142.7	140.0	138.3	139.1	0.0	0.0	0.0
61	0.0	0.0	153.7	147.8	148.3	141.0	141.3	136.1	136.9	133.8	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	132.0	136.3	138.2	134.7	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	142.7	144.0	134.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	138.5	133.8	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	138.2	137.9	122.3	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	128.5	125.2	0.0	0.0	0.0	0.0	0.0	0.0

+	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
2	288.7	290.8	290.3	288.8	288.0	290.2	295.9	298.4	288.0	283.0	278.8	0.0	275.8	272.2	267.0
3	285.2	288.4	285.8	282.8	288.2	290.8	287.0	298.9	0.0	279.7	269.8	272.3	269.1	268.0	260.7
4	280.9	284.1	282.4	280.2	282.8	281.0	295.1	287.0	0.0	268.1	274.7	271.4	269.6	263.9	256.0
5	278.8	276.2	278.0	281.2	280.3	281.6	0.0	0.0	0.0	269.6	268.3	266.0	263.3	258.4	253.7
6	266.0	270.3	274.9	276.0	274.7	0.0	0.0	0.0	259.8	265.0	262.4	260.9	255.7	252.8	252.2
7	266.7	270.1	274.5	277.0	270.4	0.0	0.0	0.0	256.4	260.1	257.8	257.8	251.0	249.3	250.1
8	270.0	269.0	278.5	279.0	0.0	0.0	0.0	253.7	254.9	265.9	256.2	255.8	247.9	245.8	248.4
9	269.8	271.7	273.1	0.0	0.0	264.5	260.7	250.9	248.8	253.4	254.1	254.2	244.2	242.8	247.7
10	271.1	268.8	0.0	0.0	0.0	261.9	251.0	243.4	245.6	247.9	247.8	245.8	242.7	243.3	247.3
11	274.2	0.0	0.0	0.0	259.8	252.0	243.2	238.8	243.1	246.7	242.2	237.8	239.2	242.6	246.0
12	268.9	0.0	0.0	0.0	260.2	246.1	240.2	237.0	237.6	242.7	239.3	235.7	236.9	241.7	245.9
13	0.0	0.0	0.0	251.2	250.3	238.7	235.9	231.2	233.3	237.0	237.1	238.0	239.0	242.9	245.8
14	0.0	0.0	0.0	249.7	241.7	232.3	228.1	228.0	227.9	233.1	234.9	237.4	240.8	242.6	244.3
15	0.0	0.0	0.0	244.2	234.4	230.0	225.4	223.6	225.2	229.4	232.1	236.3	239.4	241.9	242.8
16	0.0	0.0	234.6	232.2	222.9	226.3	224.0	222.8	224.2	227.2	230.0	231.6	236.1	238.0	239.9
17	0.0	0.0	236.4	229.0	224.1	222.3	220.8	221.6	224.0	226.9	228.5	227.8	228.8	231.8	235.3
18	0.0	229.5	228.2	224.9	222.0	223.3	220.1	222.7	226.2	230.5	227.8	224.4	224.2	229.0	232.7
19	231.8	222.6	221.0	218.6	214.7	215.9	216.4	220.3	228.3	236.2	240.8	221.8	222.2	228.3	233.6
20	224.6	217.8	215.2	212.1	210.6	212.1	212.4	215.3	220.9	236.3	259.0	220.9	220.6	230.0	232.4
21	0.0	215.0	212.8	210.8	210.7	209.7	211.3	215.2	216.4	221.0	220.9	220.1	222.3	229.0	0.0
22	0.0	212.0	209.6	210.1	209.8	208.9	211.3	214.2	216.1	219.7	217.1	221.3	223.7	226.8	224.9
23	0.0	208.8	206.0	207.4	207.8	209.5	210.2	212.1	214.2	212.4	217.9	220.0	222.4	227.4	227.0
24	0.0	204.4	205.1	205.4	205.7	205.1	208.8	211.9	212.6	215.0	219.0	220.7	223.8	226.4	225.1
25	0.0	202.2	203.2	204.6	204.8	206.2	207.7	211.0	212.9	217.8	221.8	222.1	224.1	223.2	222.7
26	199.7	199.1	201.1	203.1	205.3	205.7	208.4	211.3	214.9	216.3	217.9	220.6	220.4	0.0	0.0
27	209.9	197.3	199.6	201.2	203.1	207.8	208.1	210.8	216.1	217.4	218.0	218.7	218.5	0.0	0.0
28	198.7	197.0	200.0	201.0	204.2	208.0	209.0	210.0	213.2	215.9	216.9	216.1	215.2	0.0	0.0
29	192.3	193.6	195.7	199.2	202.9	202.9	206.7	209.0	210.8	213.0	214.5	211.4	0.0	0.0	0.0
30	191.2	194.3	197.1	200.8	203.3	203.3	208.1	0.0	212.2	214.9	214.9	208.0	0.0	0.0	0.0
31	199.2	197.3	198.7	199.5	201.4	203.7	209.2	212.8	212.4	211.7	211.1	203.0	0.0	0.0	0.0
32	188.2	190.7	189.2	199.3	199.2	200.9	208.4	209.4	209.2	208.3	205.2	201.8	0.0	0.0	0.0
33	188.7	187.1	186.4	196.4	196.2	199.1	202.4	204.4	204.6	202.7	204.7	202.5	0.0	0.0	0.0
34	189.8	181.4	196.5	194.2	192.7	196.2	197.2	199.2	199.8	202.0	200.9	201.2	0.0	0.0	0.0
35	184.1	187.7	191.7	190.5	190.5	190.3	191.7	195.0	198.2	196.0	0.0	0.0	0.0	0.0	0.0
36	186.6	188.9	187.8	188.7	188.9	191.4	192.0	194.9	196.6	194.3	0.0	0.0	0.0	0.0	0.0
37	181.8	189.4	189.7	184.4	188.0	190.9	187.7	191.7	189.7	0.0	0.0	0.0	0.0	0.0	0.0
38	186.6	178.0	184.3	187.1	189.8	186.9	189.7	189.8	186.2	0.0	0.0	0.0	0.0	0.0	0.0
39	190.1	179.8	185.2	186.9	190.6	189.6	190.1	190.8	188.0	0.0	0.0	0.0	0.0	0.0	0.0
40	182.2	177.6	183.7	180.4	185.6	182.9	193.3	189.7	188.8	0.0	0.0	0.0	0.0	0.0	0.0
41	181.8	173.4	184.2	177.1	178.3	187.2	180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	180.7	175.4	175.0	173.9	172.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	175.7	177.9	169.1	170.9	168.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	0.0	166.6	172.8	0.0	169.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	0.0	177.3	175.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	213.2	0.0	168.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	203.7	0.0	194.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	193.2	217.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	170.0	176.8	185.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	166.2	168.2	164.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	163.9	166.2	160.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	159.8	160.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	46	47	48	49	50	51	52
2	264.4	265.7	267.0	267.3	270.3	273.9	0.0
3	256.8	262.2	262.9	263.3	265.7	270.0	0.0
4	256.0	255.7	258.8	259.9	262.0	268.7	0.0
5	253.2	252.7	255.7	258.1	260.7	265.2	0.0
6	253.0	255.8	258.4	261.0	264.6	266.7	0.0
7	253.7	258.9	259.2	262.0	265.0	268.4	0.0
8	253.4	256.3	258.0	260.3	262.7	264.3	0.0
9	252.2	255.3	256.7	257.7	0.0	0.0	0.0
10	250.2	254.					
11	249.4	252.9	254.9	257.2	255.7	0.0	0.0
12	248.3	251.9	252.0	251.9	251.2	0.0	0.0
13	248.0	250.1	248.9	248.2	0.0	0.0	0.0
14	245.9	246.7	248.7	0.0	0.0	0.0	0.0
15	244.2	248.2	248.8	246.2	0.0	0.0	0.0
16	243.5	245.8	245.9	242.8	241.3	0.0	0.0
17	240.8	245.0	237.0	0.0	0.0	0.0	0.0
18	238.6	243.2	246.8	236.3	0.0	0.0	0.0
19	239.8	243.3	240.2	0.0	0.0	0.0	0.0
20	234.6	229.8	0.0	0.0	0.0	0.0	0.0

TABLE TOPO(I,J) GROUND ELEVATION IN FT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	231.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	231.0

22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	247.0	239.0	234.0	230.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237.0	231.0	226.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	232.0	225.0	221.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	218.0	218.0
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	214.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	211.0	210.0
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	209.0	205.0
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	217.0	204.0	204.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	219.0	213.0	204.0	208.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	233.0	217.0	207.0	203.0	212.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	219.0	213.0	210.0	201.0	198.0	205.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	238.0	222.0	216.0	205.0	204.0	201.0	187.0	201.0
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	241.0	226.0	218.0	215.0	217.0	207.0	201.0	197.0	188.0	200.0
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	234.0	222.0	210.0	211.0	212.0	207.0	202.0	187.0	181.0	193.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	226.0	212.0	203.0	205.0	207.0	203.0	199.0	187.0	187.0	184.0
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	218.0	218.0	214.0	211.0	204.0	198.0	193.0	194.0	190.0	182.0	179.0
38	0.0	0.0	0.0	0.0	0.0	0.0	224.0	226.0	229.0	232.0	236.0	210.0	204.0	203.0	199.0	192.0	185.0	176.0
39	0.0	0.0	0.0	0.0	0.0	245.0	238.0	238.0	237.0	251.0	241.0	214.0	211.0	210.0	202.0	190.0	188.0	174.0
40	0.0	0.0	0.0	0.0	253.0	250.0	260.0	249.0	251.0	243.0	231.0	218.0	210.0	204.0	201.0	199.0	186.0	173.0
41	0.0	0.0	0.0	0.0	253.0	252.0	249.0	247.0	238.0	231.0	230.0	224.0	216.0	207.0	199.0	197.0	180.0	176.0
42	0.0	0.0	245.0	242.0	249.0	255.0	248.0	240.0	240.0	236.0	233.0	231.0	231.0	224.0	215.0	203.0	185.0	183.0
43	0.0	245.0	245.0	247.0	240.0	238.0	232.0	236.0	228.0	226.0	226.0	232.0	231.0	227.0	226.0	218.0	198.0	179.0
44	0.0	251.0	249.0	246.0	242.0	235.0	228.0	229.0	232.0	227.0	215.0	220.0	223.0	219.0	219.0	217.0	211.0	198.0
45	0.0	0.0	247.0	244.0	239.0	233.0	228.0	223.0	218.0	222.0	215.0	219.0	219.0	214.0	213.0	216.0	214.0	185.0
46	0.0	0.0	241.0	241.0	235.0	229.0	225.0	221.0	211.0	215.0	206.0	209.0	214.0	218.0	214.0	210.0	208.0	195.0
47	0.0	0.0	234.0	236.0	233.0	228.0	225.0	222.0	212.0	207.0	201.0	201.0	203.0	212.0	213.0	207.0	203.0	202.0
48	0.0	0.0	0.0	226.0	228.0	227.0	232.0	219.0	211.0	203.0	199.0	198.0	200.0	207.0	217.0	210.0	209.0	208.0
49	0.0	0.0	0.0	224.0	226.0	222.0	220.0	218.0	211.0	201.0	195.0	196.0	186.0	200.0	212.0	207.0	202.0	204.0
50	0.0	0.0	0.0	219.0	221.0	223.0	218.0	216.0	207.0	197.0	195.0	188.0	192.0	198.0	209.0	208.0	204.0	200.0
51	0.0	0.0	0.0	215.0	216.0	215.0	219.0	214.0	208.0	198.0	190.0	191.0	193.0	198.0	203.0	204.0	204.0	196.0
52	0.0	0.0	0.0	0.0	218.0	217.0	215.0	208.0	208.0	198.0	189.0	185.0	181.0	189.0	195.0	198.0	198.0	197.0
53	0.0	0.0	0.0	0.0	218.0	212.0	211.0	208.0	203.0	196.0	188.0	184.0	183.0	189.0	198.0	195.0	192.0	193.0
54	0.0	0.0	0.0	0.0	0.0	207.0	207.0	203.0	204.0	192.0	184.0	180.0	179.0	183.0	188.0	192.0	186.0	192.0
55	0.0	0.0	0.0	0.0	0.0	0.0	207.0	198.0	200.0	195.0	185.0	180.0	179.0	181.0	181.0	189.0	184.0	188.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.0	198.0	181.0	188.0	181.0	180.0	182.0	185.0	181.0	182.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	192.0	188.0	185.0	181.0	182.0	182.0	179.0	182.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	182.0	180.0	182.0	184.0	176.0	179.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	177.0	178.0	179.0	172.0	177.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.0	173.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	168.0

+	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	300.0	303.0	304.0	305.0	302.0	301.0	303.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	293.0	299.0	301.0	300.0	297.0	298.0	300.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	289.0	289.0	295.0	295.0	295.0	293.0	296.0	301.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	289.0	290.0	291.0	294.0	292.0	289.0	293.0	301.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	279.0	285.0	292.0	289.0	286.0	288.0	292.0	290.0	294.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	277.0	282.0	268.0	278.0	279.0	285.0	288.0	287.0	286.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	269.0	274.0	275.0	275.0	278.0	280.0	285.0	287.0	289.0	287.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	285.0	266.0	274.0	278.0	277.0	280.0	279.0	287.0	291.0	290.0	285.0
9	0.0	0.0	0.0	0.0	0.0	0.0	265.0	268.0	270.0	275.0	277.0	281.0	280.0	282.0	285.0	283.0	288.0	281.0
10	0.0	0.0	0.0	0.0	0.0	263.0	265.0	270.0	276.0	273.0	273.0	277.0	281.0	288.0	287.0	286.0	279.0	272.0
11	0.0	0.0	0.0	0.0	0.0	262.0	263.0	270.0	272.0	270.0	267.0	270.0	284.0	293.0	289.0	281.0	274.0	262.0
12	0.0	0.0	0.0	0.0	258.0	262.0	264.0	267.0	266.0	284.0	265.0	272.0	284.0	288.0	286.0	277.0	270.0	258.0
13	0.0	0.0	0.0	0.0	256.0	261.0	265.0	266.0	263.0	280.0	263.0	272.0	287.0	288.0	281.0	270.0	260.0	249.0
14	0.0	0.0	0.0	251.0	255.0	260.0	265.0	265.0	258.0	258.0	267.0	290.0	285.0	289.0	288.0	284.0	252.0	240.0
15	0.0	0.0	243.0	245.0	253.0	258.0	261.0	261.0	257.0	254.0	264.0	292.0	290.0	277.0	271.0	254.0	244.0	238.0
16	0.0	247.0	239.0	246.0	254.0	256.0	258.0	255.0	248.0	251.0	261.0	273.0	287.0	259.0	253.0	242.0	233.0	233.0
17	0.0	236.0	235.0	246.0	252.0	253.0	255.0	249.0	247.0	257.0	265.0	263.0	255.0	251.0	245.0	239.0	232.0	232.0
18	0.0	232.0	240.0	248.0	248.0	250.0	246.0	245.0	251.0	265.0	268.0	258.0	248.0	242.0	238.0	235.0	231.0	233.0
19	228.0	233.0	246.0	246.0	247.0	248.0	242.0	246.0	252.0	260.0	265.0	253.0	242.0	233.0	231.0	229.0	225.0	224.0
20	234.0	239.0	244.0	245.0	244.0	239.0	240.0	244.0	245.0	251.0	258.0	249.0	239.0	228.0	225.0	222.0	220.0	221.0
21	234.0	241.0	242.0	242.0	238.0	235.0	241.0	239.0	241.0	249.0	249.0	249.0	235.0	225.0	223.0	221.0	219.0	220.0
22	232.0	236.0	238.0	237.0	230.0	235.0	238.0	235.0	246.0	248.0	247.0	247.0	231.0	222.0	220.0	220.0	219.0	219.0
23	229.0	232.0	235.0	231.0	228.0	232.0	234.0	237.0	244.0	245.0	247.0	252.0	230.0	219.0	218.0	217.0	217.0	219.0
24	223.0	228.0	233.0	228.0	226.0	232.0	230.0	238.0	242.0	242.0	248.0	264.0	229.0	214.0	215.0	215.0	213.0	218.0
25	217.0	220.0	225.0	219.0	225.0	229.0	230.0	236.0	240.0	240.0	248.0	260.0	221.0	212.0	213.0	215.0	215.0	218.0
26	213.0	219.0	223.0	216.0	221.0	225.0	226.0	233.0	238.0	238.0	243.0	247.0	221.0	209.0	211.0	213.0	218.0	217.0
27	208.0	216.0	221.0	215.0	218.0	223.0	227.0	232.0	236.0	236.0	246.0	255.0	224.0	208.0	210.0	212.0	213.0	218.0
28	212.0	217.0	219.0	213.0	220.0	221.0	225.0	228.0	232.0	236.0	253.0	259.0	215.0	207.0	211.0	211.0	214.0	218.0
29	219.0	216.0	214.0	211.0	217.0	220.0	227.0	226.0	229.0	238.0	257.0	237.0	205.0	204.0	208.0	210.0	213.0	213.0
30	218.0	218.0	212.0	214.0	215.0	221.0	225.0	225.0	227.0	236.0	259.0	222.0	201.0	204.0	209.0	212.0	213.0	213.0
31	215.0	210.0	207.0	212.0	219.0	222.0	222.0	224.0	227.0	235.0	251.0	219.0	206.0	207.0	217.0	210.0	211.0	214.0
32	207.0	201.0	204.0	206.0	214.0	219.0	217.0	215.0	221.0	231.0	243.0	225.0	210.0	207.0	217.0	209.0	209.0	211.0
33	201.0	200.0	204.0	205.0	215.0	218.0	215.0	215.0	218.0	228.0	252.0	232.0	211.0	207.0	205.0	206.0	206.0	208.0
34	201.0	206.0	208.0	202.0	209.0	214.0	212.0	213.0	215.0	231.0	260.0	242.0	209.0	206.0	207.0	204.0	203.0	206.0
35	195.0	203.0	204.0	197.0	206.0	211.0	211.0	213.0	216.0	227.0	249.0	227.0	205.0	201.0	202.0	201.0	201.0	200.0
36	186.0	199.0	201.0	199.0	212.0	211.0	209.0	209.0	212.0	223.0	238.0	218.0	202.0	199.0	198.0	199.0	199.0	201.0
37	184.0	192.0	194.0	203.0	210.0	209.0	210.0	208.0	209.0	218.0	289.0	229.0	201.0	199.0	200.0	194.0	198.0	201.0
38	181.0	187.0	190.0	201.0	206.0	207.0	208.0	208.0	208.0	214.0	246.0	226.0	200.0	196.0	189.0	197.0	200.0	199.0
39	173.0	179.0	190.0	196.0	204.0	205.0	206.0	208.0	210.0	208.0	229.0	249.0	200.0	196.0	195.0	197.0	201.0	200.0
40	170.0	178.0	189.0	191.0	200.0	205.0	204.0	208.0	209.0	201.0	221.0	224.0	194.0	194.0	194.0	190.0	196.0	203.0
41	173.0	177.0	187.0	192.0	191.0	200.0	198.0	203.0	204.0	208.0	200.0	195.0	192.0	193.0	194.0	187.0	188.0	201.0
42	179.0	184.0	188.0	190.0	188.0	190.0	198.0	202.0	203.0	209.0	202.0	188.0	191.0	189.0	185.0	184.0	181.0	0.0
43	170.0	183.0	184.0	189.0	186.0	183.0	185.0	197.0	201.0	208.0	217.0	200.0	193.0	188.0	184.0	182.0	178.0	0.0
44	177.0	180.0	183.0	185.0	186.0	181.0	179.0	187.0	201.0	205.0	222.0	214.0	197.0	190.0	185.0	0.0	178.0	0.0
45	169.0	179.0	180.0	180.0	183.0	186.0	180.0	181.0	191.0	201.0	210.0	210.0	209.0	200.0	188.0	0.0	0.0	0.0
46	177.0	178.0	179.0	178.0	179.0	184.0	183.0	183.0	184.0	196.0	211.0	212.0	226.0	220.0	219.0	0.0	0.0	0.0
47	198.0	180.0	174.0	175.0	174.0	176.0	182.0	187.0	189.0	185.0	202.0	210.0	214.0	230.0	232.0	0.0	0.0	0.0
48	198.0	180.0	171.0	173.0	170.0	173.0	178.0	185.0	197.0	180.0	189.0	194.0	203.0	232.0	213.0	203.0	0.0	0.0
49	200.0	177.0	164.0	165.0	165.0	168.0	175.0	183.0	185.0	179.0	170.0	173.0	180.0	187.0	185.0	0.0	0.0	0.0
50	194.0	177.0	176.0	167.0	168.0	165.0	168.0	181.0	181.0	189.0	167.0	170.0	178.0	178.0	178.0	0.0	0.0	0.0
51	196.0	194.0	193.0	187.0	174.0	163.0	166.0	168.0	168.0	187.0	170.0	173.0	174.0	176.0	176.0	0.0	0.0	0.0
52	196.0	186.0	189.0	188.0	181.0	189.0	181.0	159.0	160.0	184.0	171.0	172.0	173.0	177.0	0.0	0.0	0.0	0.0
53	189.0	190.0	183.0	188.0	183.0	173.0	160.0	157.0	158.0	184.0	167.0	170.0	0.0	0.0	0.0	0.0	0.0	0.0
54	184.0	187.0	184.0	182.0	182.0	174.0	159.0	157.0	160.0	166.0	170.0	172.0	0.0	0.0	0.0	0.0	0.0	0.0
55	191.0	192.0	183.0	180.0	176.0	168.0	159.0	161.0	162.0	187.0	172.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	186.0	185.0	184.0	178.0	169.0	158.0	154.0	157.0	161.0	164.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	180.0	174.0	181.0	169.0	162.0	156.0	154.0	157.0	161.0	162.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	177.0	170.0	174.0	164.0	152.0	154.0	153.0	157.0	159.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

59	176.0	178.0	174.0	168.0	162.0	154.0	152.0	153.0	156.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	173.0	171.0	168.0	161.0	158.0	153.0	151.0	151.0	153.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	164.0	161.0	153.0	151.0	148.0	150.0	150.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	150.0	161.0	153.0	153.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	153.0	154.0	155.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	148.0	149.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	146.0	148.0	150.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	144.0	148.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
1	311.0	313.0	313.0	310.0	305.0	297.0	293.0	289.0	283.0	279.0	279.0	280.0	282.0	284.0	288.0	0.0
2	307.0	308.0	308.0	303.0	298.0	290.0	286.0	282.0	277.0	274.0	276.0	276.0	277.0	280.0	283.0	0.0
3	307.0	309.0	303.0	296.0	291.0	285.0	279.0	276.0	271.0	269.0	271.0	273.0	273.0	276.0	279.0	0.0
4	305.0	304.0	295.0	289.0	285.0	281.0	280.0	274.0	266.0	264.0	266.0	269.0	270.0	272.0	275.0	0.0
5	298.0	294.0	286.0	282.0	279.0	276.0	273.0	268.0	264.0	262.0	263.0	266.0	268.0	271.0	274.0	0.0
6	290.0	287.0	281.0	276.0	272.0	270.0	266.0	263.0	262.0	263.0	266.0	268.0	271.0	276.0	277.0	0.0
7	282.0	278.0	275.0	270.0	268.0	266.0	261.0	259.0	260.0	264.0	267.0	269.0	272.0	276.0	278.0	0.0
8	277.0	268.0	265.0	266.0	265.0	265.0	258.0	258.0	258.0	263.0	266.0	268.0	271.0	274.0	278.0	0.0
9	271.0	261.0	259.0	262.0	263.0	264.0	264.0	262.0	258.0	262.0	265.0	267.0	269.0	0.0	0.0	0.0
10	261.0	253.0	254.0	257.0	258.0	258.0	253.0	253.0	257.0	260.0	265.0	268.0	270.0	273.0	0.0	0.0
11	253.0	248.0	251.0	257.0	252.0	247.0	249.0	253.0	256.0	259.0	263.0	265.0	267.0	271.0	0.0	0.0
12	249.0	245.0	248.0	253.0	249.0	246.0	247.0	252.0	256.0	258.0	262.0	262.0	262.0	265.0	0.0	0.0
13	244.0	241.0	243.0	247.0	248.0	248.0	249.0	253.0	256.0	258.0	260.0	259.0	259.0	0.0	0.0	0.0
14	238.0	236.0	238.0	243.0	248.0	247.0	251.0	253.0	254.0	256.0	257.0	257.0	0.0	0.0	0.0	0.0
15	235.0	234.0	235.0	239.0	242.0	245.0	249.0	252.0	253.0	254.0	258.0	259.0	261.0	0.0	0.0	0.0
16	234.0	233.0	234.0	237.0	240.0	242.0	245.0	248.0	250.0	254.0	257.0	260.0	263.0	265.0	0.0	0.0
17	231.0	232.0	234.0	237.0	239.0	238.0	239.0	242.0	246.0	251.0	255.0	258.0	0.0	0.0	0.0	0.0
18	230.0	233.0	235.0	241.0	239.0	234.0	234.0	236.0	243.0	249.0	253.0	258.0	262.0	0.0	0.0	0.0
19	226.0	230.0	238.0	255.0	251.0	232.0	232.0	236.0	244.0	250.0	255.0	259.0	0.0	0.0	0.0	0.0
20	222.0	225.0	230.0	249.0	269.0	231.0	231.0	241.0	246.0	250.0	256.0	0.0	0.0	0.0	0.0	0.0
21	221.0	224.0	226.0	231.0	231.0	230.0	232.0	242.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	220.0	224.0	226.0	226.0	227.0	231.0	234.0	237.0	240.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	220.0	222.0	224.0	222.0	228.0	230.0	232.0	237.0	241.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	219.0	222.0	223.0	225.0	229.0	231.0	234.0	238.0	240.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	218.0	221.0	223.0	226.0	232.0	232.0	236.0	238.0	240.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	218.0	221.0	225.0	226.0	228.0	231.0	236.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	218.0	221.0	226.0	227.0	228.0	229.0	235.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	219.0	220.0	223.0	226.0	227.0	227.0	229.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	217.0	219.0	221.0	223.0	225.0	225.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	218.0	221.0	222.0	225.0	225.0	227.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	219.0	223.0	222.0	222.0	221.0	221.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	216.0	219.0	219.0	218.0	216.0	215.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	212.0	214.0	216.0	213.0	216.0	219.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	207.0	209.0	210.0	212.0	215.0	220.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	202.0	205.0	208.0	211.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	202.0	205.0	207.0	210.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	198.0	203.0	204.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	200.0	201.0	201.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	200.0	201.0	201.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	203.0	203.0	203.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	205.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE WADA(I,J) 1990 AGRICULTURAL DEMAND IN ACRE-FT PER YEAR

	1	2	3	4	5	6	7	8	9	10	11	12	13
32	0	0	0	0	0	0	0	0	0	0	0	0	2013
33	0	0	0	0	0	0	0	0	0	0	1802	2836	6078
34	0	0	0	0	0	0	0	0	0	1446	3063	3724	4373
35	0	0	0	0	0	0	0	0	1695	4246	3914	3923	5821
36	0	0	0	0	0	0	0	0	1876	2601	3407	3291	6543
37	0	0	0	0	0	0	0	2882	1651	2150	4322	5092	2173
38	0	0	0	0	0	0	230	1186	1806	1605	1800	5194	3572
39	0	0	0	0	0	52	0	145	484	1920	2199	5454	5965
40	0	0	0	0	875	223	311	519	672	1785	2585	5007	3815
41	0	0	0	0	799	845	3843	6293	6775	6650	6488	2541	1866
42	0	0	748	1850	6143	3841	9529	10420	8430	8272	7423	9510	6423
43	0	0	0	989	6348	5373	10756	7033	7332	7616	5746	8414	5908
44	0	0	0	429	6538	3023	8361	8570	6131	8168	7268	4975	5767
45	0	0	0	1489	5134	6581	8848	17156	11141	7534	8004	7927	2998
46	0	0	0	1030	4896	7430	8581	6425	13366	5851	7947	6532	7550
47	0	0	593	3106	2986	6948	8257	6085	7318	5341	6514	7027	4366
48	0	0	0	1164	5026	5232	5986	6423	5828	6103	7153	5541	5886
49	0	0	0	3018	5665	5725	5094	7611	5770	6815	6843	5383	3231
50	0	0	0	936	8707	4105	8434	10046	10192	13924	8921	8777	1291
51	0	0	0	1276	5101	4191	2789	8089	11234	7982	7515	6551	7507
52	0	0	0	0	7585	2654	8290	7990	9401	7696	7588	5675	5612
53	0	0	0	0	641	7313	8328	8647	8062	8506	10275	2327	4232
54	0	0	0	0	0	3186	7509	3442	6227	9227	7899	1548	1387
55	0	0	0	0	0	0	516	5336	4046	13044	1884	1898	0
56	0	0	0	0	0	0	0	0	4916	4372	6974	7882	7277
57	0	0	0	0	0	0	0	0	0	0	6998	5828	7715
58	0	0	0	0	0	0	0	0	0	0	0	0	3058

+	14	15	16	17	18	19	20	21	22	23	24	25	26
8	0	0	0	0	0	0	0	0	0	0	0	0	4481
9	0	0	0	0	0	0	0	0	0	0	0	592	2553
10	0	0	0	0	0	0	0	0	0	0	326	935	2178
11	0	0	0	0	0	0	0	0	0	0	1312	3907	6685
12	0	0	0	0	0	0	0	0	0	1034	3340	2337	4873
13	0	0	0	0	0	0	0	0	0	1239	2562	2674	7306
14	0	0	0	0	0	0	0	0	2071	1070	6983	5646	9542
15	0	0	0	0	0	0	0	943	2470	2500	5180	7521	9198
16	0	0	0	0	0	0	1564	2992	6252	5191	7768	7562	7914
17	0	0	0	0	0	0	1988	6314	4154	6727	7465	7480	6630
18	0	0	0	0	0	0	4687	4140	5614	4231	6330	5749	8513
19	0	0	0	0	0	2769	2687	4731	6205	5365	6846	5919	6785
20	0	0	0	0	1370	3466	1639	2483	4623	8389	7013	6552	6241
21	0	0	0	0	1954	1372	2989	4267	4662	6946	6331	6888	4807
22	0	342	1102	2855	3018	2368	1951	5083	6447	6214	6151	8093	2450
23	0	0	1307	1608	2674	1718	1998	2787	6837	4511	5794	9527	4807

24	0	0	2632	4282	6899	2738	1260	4875	5849	5709	8558	7398	7251
25	0	0	0	1873	5293	3137	1704	5722	4752	5953	4961	8345	7947
26	0	0	0	0	2520	4448	2084	5618	5951	6530	6738	8920	6583
27	0	0	0	477	2734	5597	3335	4176	4183	6			
28	0	0	0	2800	3572	3187	3818	6548	5595	6608	8049	9215	9727
29	0	0	1650	3473	2084	2713	2742	6676	5752	6942	8558	8376	5587
30	0	1940	3222	1262	2137	2986	3493	3811	5373	5049	5928	8178	8836
31	1929	2758	2738	0	2074	5188	2848	4071	3858	6220	5148	7574	8487
32	9140	1947	1852	0	2328	5111	2262	3838	5665	5710	6355	8428	9188
33	6027	2394	0	0	927	4837	1489	5285	5273	3562	5702	8965	9352
34	3345	2608	3580	1383	2468	2780	2058	4863	5480	6515	6049	9832	9185
35	4826	5368	2953	2444	1924	2281	5264	5239	4489	6488	4815	4106	1883
36	5257	6570	2300	3208	2908	1709	3571	4907	5159	6985	6220	7872	1198
37	7818	3371	768	2060	3024	2827	3387	2988	6412	6862	6514	7426	5901
38	3292	2447	1721	4438	7043	3463	3303	1348	4727	6738	8408	9982	9818
39	4588	5052	2250	804	2947	1584	3428	2249	4302	5342	4208	3719	5585
40	5993	7120	2597	1706	2177	947	1101	4115	4180	4485	8982	6681	5390
41	1731	0	1354	2060	1526	985	958	3081	5852	3939	7532	5344	4469
42	5431	1195	492	1780	2781	0	4250	5339	6030	3995	4507	5545	4052
43	4552	3781	7509	8015	565	1570	4964	4099	5335	4347	4117	5100	4095
44	5941	7500	5770	4918	0	753	3862	3795	5073	6048	4501	5448	5330
45	5660	4378	4183	4137	2008	0	2944	3873	4038	3873	2012	5551	5582
46	10012	6100	3558	4365	1768	0	2022	4154	4428	4289	2478	2584	4344
47	8493	7323	7154	5898	4389	274	1369	2034	2922	2210	2827	2213	2054
48	8430	8283	7100	8400	8333	1479	0	0	2880	3207	5090	2490	0
49	7890	3030	7003	7587	7769	3083	594	0	1409	1882	4317	3512	1935
50	8273	5321	8910	7833	7298	2004	4880	0	0	661	2348	1408	2755
51	8360	8578	7719	8485	6874	3981	5893	7591	397	0	2098	1767	2237
52	7591	6931	7858	8083	7278	7889	5458	8518	7851	453	675	0	3051
53	4718	7203	8548	7812	7991	8371	6184	8480	8524	2959	0	385	3081
54	3349	7467	8588	7390	8115	2495	3103	8115	5491	5178	0	1507	1738
55	3287	5762	8978	8212	8857	8686	8497	1328	5475	1802	0	0	2817
56	482	5783	8027	7177	6830	8329	7867	5997	635	0	0	1851	3180
57	8465	4838	7598	8024	7027	8175	4011	3221	197	0	0	3134	1298
58	5489	7090	6496	6480	7585	7911	8393	5724	421	0	0	1871	2808
59	7312	3624	3008	6389	8785	5977	7028	3172	0	0	3155	2538	2088
60	0	0	0	0	5462	2613	8039	2499	0	0	0	0	1153
61	0	0	0	0	0	0	3323	2148	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0	1231	0
65	0	0	0	0	0	0	0	0	0	98	0	0	0
66	0	0	0	0	0	0	0	0	0	0	3475	0	0

+	27	28	29	30	31	32	33	34	35	36	37	38	39
3	0	0	1988	2583	1731	3193	3624	1885	2378	4582	5541	5685	3584
4	0	0	6289	5381	2863	8255	5530	4854	8184	6865	7502	5825	1774
5	0	1750	8217	5034	6435	3305	2738	4093	5722	2178	218	351	0
6	0	6509	2047	4478	7682	6321	4341	5580	6827	492	0	345	1294
7	4411	2185	1924	1434	1093	6153	6074	5827	2280	0	0	0	1588
8	4905	838	408	1190	3225	7885	7084	5225	0	0	0	1367	5388
9	3301	2393	6687	8460	8505	6886	5941	1213	0	0	2116	1258	0
10	5081	8882	7740	5147	8014	2088	0	0	0	1119	1667	893	1505
11	9328	9323	7193	8135	5760	0	0	0	0	2704	0	1900	0
12	6474	7018	7603	8077	5268	0	0	1498	1813	2728	0	0	0
13	8107	5232	5400	8608	1926	0	1226	0	2973	2539	0	0	0
14	5900	8958	5709	5738	532	0	0	1804	3674	2031	0	0	0
15	5853	3848	2298	868	0	0	1285	3982	0	1218	0	1341	1098
16	6585	7703	5527	940	220	0	3714	7127	3940	0	840	1080	2328
17	4992	4659	352	422	368	1180	5725	6464	666	622	618	1331	1669
18	5805	2845	590	0	0	5647	9128	6079	370	1180	558	1473	3927
19	8973	4478	380	0	1434	7821	8821	7313	2480	546	831	2070	3724
20	6452	6528	5324	2108	5273	6288	6595	4501	1338	336	533	953	1040
21	5282	8826	4483	4341	3170	2858	1671	1824	694	998	0	1943	3381
22	7464	7428	7638	7133	3995	8552	4560	1100	0	1207	2538	4158	1838
23	6733	8305	7934	5860	1117	5743	5277	4119	423	1303	1964	4578	4387
24	8053	8241	6684	8427	700	7810	4295	3558	437	2255	3501	5040	5602
25	8057	7891	7505	3770	861	6313	5338	3962	911	1594	6341	4683	4381
26	7317	7183	7151	3058	3033	7201	4918	2301	2297	4094	2801	4959	3008
27	8850	8019	8034	2852	2744	4840	2846	4672	3538	5927	3298	1629	3352
28	8554	9958	8003	2873	2375	5579	4548	6352	3174	1949	0	0	0
29	7194	8353	8295	7083	6873	6074	6514	6848	4362	0	2311	1749	1045
30	8873	7890	7595	0	8060	6201	6115	1570	880	0	1808	1033	1129
31	8471	8832	6368	0	4884	5450	5208	4380	4152	4230	4779	3837	673
32	9737	9188	3777	407	5873	4123	3239	6324	2947	1797	3678	2599	2180
33	9500	8744	4285	994	3141	4335	6613	5072	3876	3154	4415	5110	329
34	9180	7631	7312	985	0	5562	6553	6521	5212	6249	6233	7622	1895
35	5995	6292	468	0	0	1234	1780	3300	4526	5649	9684	3078	1929
36	3867	8523	0	0	1343	6734	4505	5752	8562	7753	4298	2180	1908
37	3945	3883	587	0	1042	1758	3301	3283	3936	148	4891	2581	0
38	2232	6259	1123	897	0	3087	902	1854	1992	2085	2187	0	0
39	3901	1338	1057	0	1314	861	1503	775	1654	0	2481	453	0
40	6199	2734	0	1831	1361	0	0	1812	1438	0	1908	0	0
41	3908	3529	1324	1992	1654	0	2200	2187	0	0	0	0	0
42	3954	2558	1995	2401	1872	0	2378	1457	1071	0	0	0	0
43	3908	3190	2795	995	1262	1802	1539	1482	0	0	0	0	0
44	4035	0	2413	1518	0	1490	0	0	0	0	0	0	0
45	3530	2891	3302	0	0	0	0	0	0	0	0	0	0
46	2019	2081	1700	2474	1339	0	0	0	0	0	0	0	0
47	1988	736	1544	1598	0	0	0	0	0	0	0	0	0
48	1551	0	1701	1818	1846	0	0	0	0	0	0	0	0
49	1721	1578	3697	3086	2843	0	0	0	0	0	0	0	0
50	1237	2902	5964	2846	1596	1932	0	0	0	0	0	0	0
51	3273	5942	3035	2298	2800	0	0	0	0	0	0	0	0
52	4141	5178	2847	1284	1454	0	0	0	0	0	0	0	0
53	3816	3208	2094	0	0	0	0	0	0	0	0	0	0
54	1884	2377	0	0	0	0	0	0	0	0	0	0	0
55	948	0	0	0	0	0	0	0	0	0	0	0	0

+	40	41	42	43	44	45	46	47	48	49	50	51	52
4	2409	0	0	0	0	0	0	0	0	0	0	0	0
5	2503	1772	0	0	0	0	0	0	0	0	0	0	0

6	2380	2302	0	0	0	0	0	0	0	0	0	0	0
7	1577	0	0	0	0	0	0	0	0	0	0	0	0
8	676	0	0	0	0	0	0	0	0	0	0	0	0
15	1225	0	1294	1819	0	1722	1962	1810	1007	0	0	0	0
16	1057	298	1016	2790	1273	0	0	1438	0	0	0	0	0
17	1701	571	1787	1755	1398	2278	0	0	504	0	0	0	0
18	3022	843	2945	3080	1144	1892	0	0	0	580	0	0	0
19	2242	1781	3614	3402	1179	1943	1385	880	771	0	0	0	0
20	2221	3565	5150	3851	2343	930	0	0	0	0	0	0	0
21	1872	2814	1232	2101	0	0	0	0	0	0	0	0	0
22	3132	3689	4833	2148	568	0	0	0	0	0	0	0	0
23	2731	4824	3409	1718	0	1153	0	0	0	0	0	0	0
24	2608	4782	4729	2743	2234	0	0	0	0	0	0	0	0
25	4885	2047	2898	752	0	0	0	0	0	0	0	0	0
26	2497	2439	0	0	0	0	0	0	0	0	0	0	0
27	2042	0	0	0	0	0	0	0	0	0	0	0	0
28	786	0	0	0	0	0	0	0	0	0	0	0	0
29	2805	0	0	0	0	0	0	0	0	0	0	0	0
30	822	567	0	0	0	0	0	0	0	0	0	0	0
31	988	598	81	0	0	0	0	0	0	0	0	0	0
32	2905	3141	0	0	0	0	0	0	0	0	0	0	0
33	1218	1329	0	0	0	0	0	0	0	0	0	0	0
35	1898	0	0	0	0	0	0	0	0	0	0	0	0
36	1410	0	0	0	0	0	0	0	0	0	0	0	0

TABLE WADD(I,J) 1982 DEEP AQUIFER DEMAND IN ACRE-FT PER YEAR

	1	2	3	4	5	6	7	8	9	10	11	12
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.57	51.83
38	0.0	0.0	0.0	0.0	0.0	0.0	0.33	11.56	17.54	4.20	7.63	49.80
39	0.0	0.0	0.0	0.0	0.0	0.58	0.0	0.86	4.49	4.80	18.80	49.03
40	0.0	0.0	0.0	0.0	9.13	2.14	2.70	1.85	2.08	15.02	23.91	44.99
41	0.0	0.0	0.0	0.0	8.21	8.90	38.41	63.29	69.37	66.59	86.88	18.39
42	0.0	0.0	4.28	17.05	64.68	38.48	99.68	106.80	68.03	86.79	77.18	103.32
43	0.0	0.0	0.0	8.86	64.61	52.23	108.21					
44	0.0	0.0	0.0	2.85	66.94	30.40	83.91	98.18	84.69	85.59	75.21	47.30
45	0.0	0.0	0.0	13.58	51.47	67.39	85.80	93.48	79.48	78.50	62.29	84.04
46	0.0	0.0	0.0	7.86	49.42	77.51	87.68	90.27	99.97	59.94	83.55	88.46
47	0.0	0.0	2.85	29.48	30.23	72.15	77.05	62.92	79.58	54.45	68.00	73.31
48	0.0	0.0	0.0	10.66	49.74	53.67	81.48	86.50	70.98	63.11	74.60	67.39
49	0.0	0.0	0.0	31.96	57.58	68.59	52.74	80.14	70.18	68.13	89.85	56.34
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	531.30
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	392.28
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	381.48
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	150.84
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	103.88
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	109.14

+	13	14	15	16	17	18	19	20	21	22	23	24
36	0.0	51.71	72.24	15.93	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	0.0	82.08	29.70	7.20	13.30	23.01	0.0	0.0	0.0	0.0	0.0	0.0
38	30.70	29.65	18.24	5.94	44.13	73.07	0.0	0.0	0.0	0.0	71.90	92.10
39	60.07	43.41	47.89	18.08	7.20	23.38	0.0	0.0	0.0	0.0	57.18	41.77
40	35.11	69.43	69.13	21.78	10.78	11.07	0.0	0.0	0.0	0.0	0.0	0.0
41	13.02	12.47	0.0	2.82	18.58	7.90	0.0	0.0	0.0	0.0	0.0	0.0
42	52.09	53.48	11.33	3.97	15.28	27.61	0.0	0.0	0.0	0.0	0.0	0.0
43	58.32	35.95	37.09	75.34	39.77	1.59	0.0	0.0	0.0	0.0	0.0	0.0
44	61.37	69.56	74.58	56.15	49.73	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	29.42	57.19	43.29	40.17	41.19	18.23	0.0	0.0	0.0	0.0	0.0	0.0
46	81.00	108.25	65.50	38.20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	42.29	91.31	77.09	75.17	55.78	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	58.55	566.76	557.10	478.48	563.58	422.64	88.64	0.0	0.0	0.0	0.0	0.0
49	32.83	535.38	202.38	471.08	507.30	520.44	189.48	39.48	0.0	0.0	0.0	0.0
50	86.88	555.60	357.38	599.34	526.86	488.40	103.20	325.52	0.0	0.0	0.0	0.0
51	500.34	580.10	583.74	519.12	568.50	460.62	251.40	399.86	506.94	28.64	0.0	0.0
52	365.78	510.80	488.20	528.88	543.12	487.32	533.62	384.74	577.56	510.68	28.84	0.0
53	279.00	309.84	484.58	574.98	511.08	535.20	423.42	412.50	588.80	573.18	190.80	0.0
54	92.78	217.32	498.90	577.68	483.92	542.28	148.38	199.92	459.54	359.58	336.60	0.0
55	0.0	213.24	380.52	803.08	414.84	595.62	582.00	430.50	83.28	358.20	100.86	0.0
56	0.0	0.0	0.0	538.20	480.84	463.98	558.88	513.18	488.18	41.64	0.0	0.0
57	0.0	0.0	0.0	515.70	404.28	470.64	410.28	268.20	218.60	13.32	0.0	0.0
58	0.0	0.0	0.0	0.0	433.32	507.60	527.28	429.90	384.84	28.32	0.0	0.0
59	0.0	0.0	0.0	0.0	427.98	590.18	395.28	488.18	213.30	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	369.52	161.70	403.20	166.62	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	212.22	140.22	0.0	0.0	0.0

+	25	26	27	28	29	30	31	32	33	34	35	36
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.38
16	0.0	0.0	0.0	84.09	58.97	2.71	0.83	0.0	38.56	77.87	38.49	0.0
17	0.0	0.0	50.78	50.41	2.80	2.20	0.75	3.34	58.23	69.88	4.77	2.00
18	58.89	93.71	59.84	26.67	3.82	0.0	0.0	60.29	101.78	64.79	0.87	7.28
19	80.55	73.62	99.71	42.78	0.67	0.0	12.83	88.23	97.28	78.77	18.41	1.78
20	70.05	64.28	88.62	70.12	56.64	19.43	58.30	89.01	71.58	46.16	10.13	2.27
21	74.08	44.85	53.78	96.58	44.98	39.57	31.77	26.81	12.79	13.45	3.79	9.66
22	90.59	27.42	80.82	79.18	81.89	75.99	39.24	66.48	40.72	3.22	0.0	4.47
23	102.95	51.99	72.14	89.84	85.70	60.97	12.52	56.33	52.34	35.18	3.45	8.21
24	79.78	78.54	86.78	88.99	71.45	70.91	7.79	82.18	37.70	29.10	2.58	17.55
25	84.80	86.11	86.50	84.28	75.93	41.14	9.64	63.08	49.60	39.61	8.21	6.19
26	89.72	70.50	78.21	76.43	78.48	33.58	33.36	74.12	44.42	25.27	20.16	35.27
27	84.70	93.85	93.80	86.33	85.79	28.63	28.88	51.39	29.51	48.21	26.89	57.65
35	43.72	20.42	66.45	69.87	2.96	0.0	0.0	9.79	12.51	28.96	46.59	58.15
36	84.88	6.10	38.38	72.89	0.0	0.0	6.56	75.30	47.14	50.29	92.01	84.58
37	80.86	63.11	38.18	38.73	4.16	0.0	11.38	6.18	27.01	30.36	37.14	1.63
38	111.42	109.43	15.90	84.24	8.96	7.59	0.0	31.50	3.99	15.63	11.30	17.98
39	38.31	60.59	38.28	8.90	5.05	0.0	8.96	1.45	3.07	1.18	14.77	0.0

+	37	38	39	40	41	42	43	44	45	46	47	48
16	2.97	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	1.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.76	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

19	2.46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.76	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	16.32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	10.34	39.81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	26.89	45.59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	64.00	44.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	20.58	46.46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	24.27	4.10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE WADS(I,J) 1982 SURFACE WATER DEMAND IN ACRE-FT PER YEAR

	1	2	3	4	5	6	7	8	9	10	11	12
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	155.48	318.89
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	121.03	362.70	418.34
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	115.83	463.45	466.70	435.83
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	147.03	242.19	373.48	370.11
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	325.00	115.83	193.57	549.12	829.28
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	104.22	157.88	67.20	122.08	796.80
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.94	40.41	78.80	288.80	784.48
40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.65	16.54	135.19	212.49	719.84
41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	569.81	624.33	617.31	599.22	293.60
42	0.0	0.0	102.24	408.20	582.12	348.14	887.94	861.20	792.27	781.11	894.82	1653.12
43	0.0	0.0	0.0	207.90	583.29	470.07	973.89	643.50	676.17	703.44	532.71	1441.28
44	0.0	0.0	0.0	68.40	601.38	273.80	755.19	793.44	782.21	770.31	678.89	758.80
45	0.0	0.0	0.0	325.92	483.23	808.51	772.20	841.32	715.32	708.50	560.81	1344.64
46	0.0	0.0	0.0	188.84	444.78	897.59	609.12	542.43	872.73	539.48	752.85	818.14
47	0.0	0.0	68.40	707.52	725.62	849.35	693.46	686.28	689.22	490.06	612.00	858.79
48	0.0	0.0	0.0	256.84	1193.76	482.13	553.14	598.50	638.84	567.99	671.40	519.51
49	0.0	0.0	0.0	787.04	1381.92	527.31	474.96	721.28	631.44	813.17	589.85	507.08
50	0.0	0.0	0.0	35.00	977.97	288.23	856.81	791.35	798.28	1099.21	898.80	2856.50
51	0.0	0.0	0.0	100.03	400.05	225.82	217.58	622.79	661.70	619.15	565.04	1981.40
52	0.0	0.0	0.0	0.0	592.13	189.22	843.51	618.49	733.04	580.15	618.50	1907.40
53	0.0	0.0	0.0	0.0	42.28	650.83	849.18	674.31	629.02	860.10	798.98	754.20
54	0.0	0.0	0.0	0.0	0.0	247.73	686.95	262.85	481.53	721.14	619.78	519.80
55	0.0	0.0	0.0	0.0	0.0	0.0	40.88	420.00	312.83	1020.39	131.18	546.70
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	383.53	340.83	640.98	618.10
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	488.93	480.74

+	13	14	15	16	17	18	19	20	21	22	23	24
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.24
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	67.89
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.84	48.20
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.38	38.46
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.86	9.28	111.98
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.79	36.14	37.	
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.52	59.85	120.84	101.38	165.78
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.34	120.40	73.14	131.20	148.52
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1253.38	40.89	57.02	42.00	93.25
19	0.0	0.0	0.0	0.0	0.0	0.0	656.11	615.33	46.74	86.97	55.72	72.86
20	0.0	0.0	0.0	0.0	0.0	302.47	895.42	9.41	19.88	37.27	92.48	75.55
21	0.0	0.0	0.0	0.0	0.0	224.17	8.26	25.23	43.60	48.25	73.88	67.47
22	0.0	0.0	21.75	149.08	718.20	569.74	22.87	11.00	31.54	89.31	85.18	65.17
23	0.0	0.0	0.0	151.38	125.28	557.98	11.95	14.41	23.55	73.74	48.20	58.63
24	0.0	0.0	0.0	450.08	1000.79							
25	0.0	0.0	0.0	0.0	188.94	66.24	27.30	7.78	71.13	49.93	82.58	60.99
26	0.0	0.0	0.0	0.0	0.0	18.82	44.86	13.55	70.31	63.28	89.12	71.59
27	0.0	0.0	0.0	0.0	2.02	20.60	56.17	30.18	41.18	42.82	89.43	87.80
28	0.0	0.0	0.0	0.0	304.98	388.31	72.00	82.31	69.62	60.58	69.31	63.71
29	0.0	0.0	0.0	178.62	387.14	15.90	61.38	73.32	71.04	61.14	73.84	69.76
30	0.0	0.0	203.84	340.80	9.54	38.22	78.69	91.65	110.01	166.12	150.88	180.72
31	0.0	199.81	280.15	288.33	0.0	43.20	150.24	85.01	122.61	111.03	188.47	149.28
32	227.37	1280.37	150.15	140.79	0.0	56.13	155.19	63.18	118.79	172.88	176.78	200.34
33	818.68	787.00	195.91	0.0	0.0	17.13	145.32	39.30	182.09	163.50	106.53	184.65
34	515.08	350.74	354.90	488.86	27.81	80.99	78.78	82.86	152.84	210.03	214.83	188.61
35	740.61	624.13	852.81	338.04	80.21	40.52	69.87	164.26	182.12	137.56	206.28	153.24
36	871.13	827.36	1155.84	254.88	88.83	66.51	40.44	103.02	149.34	158.04	219.81	195.47
37	197.47	1312.98	475.20	115.20	212.80	388.18	77.34	97.44	87.75	202.17	220.11	204.33
38	491.20	474.40	281.84	95.04	706.08	1169.12	98.16	87.44	32.31	138.12	71.90	82.10
39	951.12	684.56	787.84	289.28	118.20	374.24	20.43	94.08	50.78	114.18	57.18	41.77
40	581.78	1110.88	1108.08	348.48	172.18	177.12	24.78	20.31	108.09	121.86	119.58	199.38
41	208.32	189.52	0.0	41.92	284.98	128.40	24.78	24.36	65.73	175.11	101.58	232.47
42	833.44	856.36	181.28	63.52	244.48	441.78	0.0	119.49	155.78	181.92	101.58	128.30
43	933.12	575.20	593.44	1205.44	635.32	25.44	8.22	143.10	103.05	149.82	112.85	108.62
44	981.92	952.96	1257.28	898.40	795.58	0.0	7.20	103.05	103.05	178.22	176.91	115.98
45	470.72	915.04	692.84	642.72	859.04	291.68	0.0	73.17	101.58	108.68	101.58	56.88
46	1298.00	1732.00	1048.00	811.20	121.86	48.75	0.0	58.08	102.03	128.81	121.88	80.93
47	676.64	1460.98	1233.44	1202.72	892.16	121.88	4.88	40.74	47.28	81.27	82.94	56.88
48	526.95	2833.80	2785.50	2382.30	2817.90	2113.20	433.20	0.0	0.0	50.10	70.56	137.07
49	525.28	2878.80	1011.90	2355.30	2536.50	2802.20	947.40	197.40	0.0	37.14	43.88	121.88
50	434.40	2778.00	1786.60	2998.70	2634.30	2442.00	516.00	1626.10	0.0	0.0	14.85	55.50
51	2501.70	2800.50	2918.70	2595.80	2842.50	2303.10	1257.00	1998.30	2534.70	133.20	0.0	39.27
52	1828.80	2553.00	2331.00	2834.30	2715.80	2435.60	2559.10	1823.70	2887.80	2553.30	133.20	10.11
53	1395.00	1549.20	2422.80	2874.90	2555.40	2678.00	2117.10	2062.50	2844.00	2865.90	854.00	0.0
54	453.80	1088.50	2494.50	2888.40	2489.50	2711.40	741.90	999.50	2297.70	1799.40	1883.00	0.0
55	0.0	1066.20	1902.60	3015.30	2074.20	2978.10	2910.00	2152.50	416.40	1791.00	504.30	0.0
56	568.82	31.01	455.07	2591.00	2404.20	2319.90	2784.30	2565.90	2340.90	208.20	0.0	0.0
57	804.10	508.06	381.08	2578.50	2021.40	2353.20	2051.40	1341.00	1083.00	86.80	0.0	0.0
58	240.17	429.68	556.59	511.00	2186.80	2538.00	2638.40	2148.50	1824.20	141.80	0.0	0.0
59	0.0	570.93	282.73	237.09	2139.90	2950.80	1978.40	2340.90	1068.50	0.0	0.0	378.73
60	0.0	0.0	0.0	0.0	0.0	1787.60	808.50	2018.00	833.10	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1061.10	701.10	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.89	0.0

+	25	26	27	28	29	30	31	32	33	34	35	36
3	0.0	0.0	0.0	0.0	9.54	28.90	2.90	38.54	48.18	28.90	38.54	78.88
4	0.0	0.0	0.0	0.0	118.70	95.68	24.08	118.52	122.34	91.20	157.60	129.74
5	0.0	0.0	0.0	168.84	119.42	89.28	119.44	47.50	47.50	75.72	106.56	37.44
6	0.0	0.0	0.0	625.85	9.64	70.54	145.38	117.10	82.58	100.82	134.22	0.0
7	0.0	0.0	411.75	177.21	9.76	14.64	19.52	86.72	110.80	106.58	24.08	0.0
8	0.0	423.99	488.54	60.48	4.88	9.64	43.02	155.34	134.88	92.32	0.0	0.0

9	15.57	129.51	311.31	226.17	149.14	184.22	185.58	143.68	118.50	0.0	0.0	0.0
10	58.41	72.72	560.52	856.52	162.02	99.92	172.40	42.08	0.0	0.0	0.0	8.22
11	295.92	486.09	915.57	900.99	149.86	173.84	120.72	0.0	0.0	0.0	0.0	34.40
12	28.54	92.70	174.80	141.16	159.44	174.26	108.54	0.0	0.0	0.0	6.26	18.70
13	47.12	145.88	166.14	129.00	107.22	135.70	0.0	0.0	0.0	0.0	30.34	11.90
14	108.04	193.82	117.28	139.94	116.56	114.84	0.0	0.0	0.0	26.58	77.18	24.22
15	151.02	191.24	113.54	62.98	26.50	0.0	0.0	0.0	0.0	55.00	0.0	8.72
16	149.48	160.68	131.80	168.18	117.94	0.0	0.0	0.0	77.10	155.74	70.98	0.0
17	149.36	131.66	101.58	100.82	0.0	0.0	0.0	0.0	116.46	139.38	9.54	4.00
18	117.38	187.42	118.88	0.0	0.0	0.0	0.0	120.58	203.52	129.58	1.34	14.56
19	121.10	147.24	198.42	85.52	0.0	0.0	26.86	178.48	194.58	157.54	38.82	3.52
20	140.10	128.56	137.24	140.24	113.28	0.0	118.80	138.02	143.18	92.32	20.28	4.54
21	148.16	89.70	107.52	193.18	89.88	79.14	0.0	53.82	26.88	26.80	7.58	19.32
22	181.18	54.84	181.24	158.32	153.98	151.98	0.0	132.96	81.44	6.44	0.0	8.84
23	205.90	103.98	144.28	179.68	171.40	121.94	0.0	112.66	104.68	70.32	6.80	18.42
24	159.56	157.08	173.56	177.96	142.90	141.82	0.0	164.36	76.40	58.20	6.18	36.10
25	159.50	172.22	173.00	168.52	151.86	82.28	0.0	128.16	99.20	79.22	18.42	10.38
26	179.44	141.00	156.42	152.86	152.98	0.0	66.72	146.24	88.84	50.54	40.32	70.54
27	198.40	187.70	187.80	172.66	171.58	0.0	57.78	102.78	59.02	96.42	53.78	116.10
28	208.06	217.32	191.96	200.16	178.80	0.0	47.50	123.22	100.52	142.74	125.28	20.94
29	144.56	125.00	161.18	188.20	185.80	0.0	133.54	136.42	143.84	154.20	157.88	0.0
30	183.42	198.85	194.88	177.26	158.16	0.0	133.88	137.84	134.88	32.88	22.98	0.0
31	188.50	190.86	189.54	198.08	136.82	0.0	94.74	120.74	116.78	89.42	167.28	181.22
32	184.08	208.88	218.79	211.56	80.16	0.0	131.42	87.58	89.70	142.34	113.04	42.78
33	201.40	210.80	213.52	148.92	94.40	0.0	57.98	89.88	143.94	109.48	207.90	181.56
34	221.04	208.34	206.88	168.98	0.0	0.0	0.0	115.82	146.44	145.98	273.00	350.94
35	43.72	20.42	68.45	69.87	0.0	0.0	0.0	9.79	12.51	28.95	48.59	68.16
36	84.86	8.10	38.36	72.89	0.0	0.0	6.56	76.30	47.14	60.28	92.01	84.56
37	80.86	63.11	38.18	38.73	4.15	0.0	11.36	8.18	27.01	30.35	37.14	1.53
38	111.42	109.43	15.90	94.24	8.98	0.0	0.0	31.50	3.99	15.63	11.30	17.98
39	38.31	60.58	38.28	8.90	5.05	0.0	8.98	1.45	3.07	1.16	14.77	0.0
40	191.51	183.84	176.07	66.78	0.0	7.77	7.88	0.0	0.0	7.38	7.88	0.0
41	184.77	113.91	94.23	89.07	18.68	27.81	7.44	0.0	35.91	32.04	0.0	0.0
42	182.00	102.51	98.37	55.38	39.38	44.13	19.96	0.0	27.81	7.86	7.86	0.0
43	150.12	102.51	94.23	70.92	59.01	19.88	6.90	7.88	16.72	7.86	0.0	0.0
44	181.52	149.81	102.51	0.0	38.38	18.68	0.0	7.88	0.0	0.0	0.0	0.0
45	165.16	164.87	82.32	59.01	80.07	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	32.88	71.08	23.12	20.18	11.58	26.50	2.82	0.0	0.0	0.0	0.0	0.0
47	31.22	23.84	19.04	2.74	9.32	7.48	0.0	0.0	0.0	0.0	0.0	0.0
48	26.54	0.0	7.48	0.0	11.58	2.26	9.82	0.0	0.0	0.0	0.0	0.0
49	51.14	17.92	8.60	10.44	53.20	39.40	30.80	0.0	0.0	0.0	0.0	0.0
50	24.36	39.16	10.30	39.98	116.74	32.48	16.72	4.58	0.0	0.0	0.0	0.0
51	45.27	31.28	48.72	116.74	42.78	29.54	37.98	0.0	0.0	0.0	0.0	0.0
52	0.0	48.14	73.84	99.56	41.58	8.74	22.42	0.0	0.0	0.0	0.0	0.0
53	1.12	47.32	63.34	44.82	17.48	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	5.84	13.76	16.92	34.58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	0.0	34.10	10.20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	13.06	45.64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	44.40	1.14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	125.18	247.17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	190.74	32.89	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	72.49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	120.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	37	38	39	40	41	42	43	44	45	46	47	48
3	97.20	97.80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	147.82	109.94	0.0	19.28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	39.54	20.82	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	15.88	48.64	37.48	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	16.86	15.80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	9.64	94.36	3.08	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	14.80	5.68	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	17.94	2.04	4.22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	12.98	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	6.20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	49.68	16.88	26.70	0.0	78.24	78.24	0.0	87.38	87.08	79.20	27.80
16	5.94	27.84	118.70	13.38	14.58	56.34	147.54	44.58	0.0	0.0	48.86	0.0
17	2.10	43.02	64.74	78.88	20.76	95.90	70.38	43.80	113.46	0.0	0.0	15.68
18	1.52	47.76	238.32	187.70	17.64	170.34	189.44	25.02	58.76	0.0	0.0	0.0
19	4.92	103.32	223.62	105.96	59.10	197.76	194.94	31.32	74.46	41.88	23.48	15.66
20	1.52	14.82	22.98	118.92	204.84	318.00	222.00	100.32	20.68	0.0	0.0	0.0
21	0.0	22.62	189.24	71.16	131.04	31.32	32.78	0.0	0.0	0.0	0.0	0.0
22	32.64	255.18	62.04	187.76	208.34	249.68	88.22	13.28	0.0	0.0	0.0	0.0
23	20.68	79.62	248.82	120.30	286.88	161.52	36.46	0.0	27.72	0.0	0.0	0.0
24	53.78	91.18	330.96	119.52	280.32	279.80	135.18	80.48	0.0	0.0	0.0	0.0
25	128.00	88.00	255.42	288.16	71.88	133.20	20.40	0.0	0.0	0.0	0.0	0.0
26	41.36	92.90	151.56	111.72	102.60	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	48.54	8.20	177.00	84.12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	0.0	0.0	0.0	4.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	45.68	72.54	21.08	150.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	57.80	21.12	40.20	15.30	3.84	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	234.08	176.38	7.88	30.88	7.68	3.84	0.0	0.0	0.0	0.0	0.0	0.0
32	159.84	70.20	35.10	93.60	120.90	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	218.34	257.46	7.68	32.22	42.96	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	339.42	444.72	23.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	596.88	105.36	23.40	23.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	202.80	65.22	23.40	11.70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	230.40	96.48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	52.20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	87.78	1.92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	50.82	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	49	50	51	52
18	23.34	0.0	0.0	0.0

TABLE WADT(I,J) 1990 TOTAL WATER DEMAND IN ACRE-FT PER YEAR

	1	2	3	4	5	6	7	8	9	10	11	12	13
32	0	0	0	0	0	0	0	0	0	0	0	0	2053
33	0	0	0	0	0	0	0	0	0	0	1842	2878	6118

34	0	0	0	0	0	0	0	0	40	1485	3103	3784	4413
35	0	0	0	0	0	0	0	0	1786	4285	3954	3983	5861
36	0	0	0	0	0	0	0	0	1918	2841	3447	3331	6583
37	0	0	0	0	0	0	0	2892	1851	2180	4332	5102	2183
38	0	0	0	0	0	0	240	1196	1818	1615	1810	5204	3582
39	0	0	0	0	40	505	10	156	494	1930	2208	5484	5975
40	0	0	0	0	915	233	321	529	582	1795	2595	5017	3825
41	0	0	0	0	839	885	3883	6333	6785	5880	6498	2551	1876
42	0	0	1615	2517	6163	3881	9589	10450	8470	8312	7433	8520	5433
43	0	0	10	979	6356	5383	10795	8818	7372	7858	5722	8414	5908
44	0	1643	10	439	6548	3033	8371	8810	8171	8208	7298	4876	5767
45	0	0	10	1489	5144	8581	8858	17187	11181	7574	6044	7987	2898
46	0	0	10	1040	4905	7440	6581	6435	13368	5881	7987	6572	7690
47	0	0	609	3119	2998	8958	8267	8095	7328	5361	6548	7058	4405
48	0	0	0	1184	5038	5242	6378	8433	6838	6134	7223	5581	5728
49	0	0	10	3028	5875	5735	5104	7621	5780	8848	6674	5383	3231
50	0	0	0	948	8717	4115	8444	10058	10202	13934	8931	8777	1291
51	0	0	0	1285	5111	4201	2789	8099	11244	7982	7625	6551	7507
52	0	0	0	0	7595	2884	8340	8000	9411	7705	7998	5675	5812
53	0	0	0	0	551	7323	8339	8857	8072	8516	10278	2327	4232
54	0	0	0	0	0	3198	7519	3452	6237	9237	7898	1546	1387
55	0	0	0	0	0	0	528	5346	4058	13064	1684	1698	0
56	0	0	0	0	0	0	0	0	4918	4372	6874	7882	7277
57	0	0	0	0	0	0	0	0	0	0	6004	6838	7728
58	0	0	0	0	0	0	0	0	0	0	0	0	3058

+	14	15	16	17	18	19	20	21	22	23	24	25	26
8	0	0	0	0	0	0	0	0	0	0	0	0	4501
9	0	0	0	0	0	0	0	0	0	0	0	612	2573
10	0	0	0	0	0	0	0	0	0	0	348	958	2198
11	0	0	0	0	0	0	0	0	0	0	1322	3917	5895
12	0	0	0	0	0	0	0	0	0	1094	3350	2347	4883
13	0	0	0	0	0	0	0	0	0	1249	2572	3783	7316
14	0	0	0	0	0	0	0	0	2081	1060	5993	5837	9552
15	0	0	0	0	0	0	0	853	2460	2510	6190	7531	9208
16	0	0	0	0	0	0	1584	3002	8262	6201	7778	7572	7934
17	0	0	0	0	0	0	1998	5324	4184	8787	7478	7480	5950
18	0	0	0	0	0	0	4997	4150	5824	4241	8340	5759	8523
19	0	0	0	0	0	2779	2897	4741	6326	6375	8858	5929	5825
20	0	0	0	0	1380	3476	1548	2483	4633	8398	7023	8562	6251
21	0	0	0	0	1984	1382	2998	4802	4872	6958	6341	8898	4817
22	0	362	1344	2875	3028	2378	1961	5093	5457	6224	6151	8093	2450
23	0	0	1408	1828	2684	1726	2008	2787	5947	4581	5794	9527	4807
24	0	0	2852	4302	8809	2748	3942	4885	5858	5719	8568	7398	7251
25	0	0	0	1893	6303	3147	1714	5732	4782	5894	4981	8345	7957
26	0	0	0	10	2530	4458	2094	8828	5981	8540	6748	8951	6593
27	0	0	0	487	2744	5607	3345	4188	4183	6553	6383	7789	8585
28	0	0	0	2320	3592	3207	3828	6556	5705	6840	6069	6225	9737
29	0	0	1670	3493	2084	2723	2752	8888	5762	6952	8568	6386	5897
30	0	1990	3242	1282	2147	2896	3503	3821	5383	5058	6938	8189	8848
31	1969	2796	2756	20	2467	5178	2558	4081	3868	6230	5158	7684	8497
32	9180	1987	1872	20	2338	5121	2272	4231	5975	5720	6368	8438	9198
33	6067	2434	40	20	937	4847	1498	5295	5283	3572	5712	8976	9382
34	3385	2848	3590	1373	2478	2770	2078	4873	8490	6525	6059	9842	9195
35	4866	6408	2993	2454	1934	2291	5274	5248	4499	8494	4825	4116	1893
36	5257	6580	2310	3219	2919	1719	3581	4917	5179	8875	6230	7482	1208
37	7628	3381	779	2050	3034	2837	3397	2998	8422	8872	8524	7436	5811
38	3302	2457	1882	4439	7043	3473	3424	1348	4727	5748	8418	9972	9828
39	4578	5082	2250	604	2957	1594	3428	2249	4312	5352	4218	3729	5586
40	7003	7130	2707	1706	2177	947	1101	4639	4170	4538	6992	5671	6400
41	1741	10	1374	2050	1526	985	989	3091	5882	3949	7542	5354	4489
42	5441	1206	502	1791	2781	0	4250	5349	8040	4005	4517	5856	4062
43	4734	3781	7820	5025	556	1570	4964	4109	5345	4357	4127	5110	4075
44	5841	7500	5770	4928	0	753	3882	3805	8083	8058	4511	5458	5340
45	5650	4378	4183	4137	2008	0	2944	3883	4048	3883	2022	5571	5592
46	10012	8100	3568	4365	1768	0	2022	4154	4438	4278	2488	2584	4354
47	8533	7363	7154	5698	4389	274	1389	2034	2922	2220	2637	2223	2084
48	8430	8283	7120	8400	6333	1479	0	0	2890	3217	5100	2500	10
49	7890	3040	7003	7587	7789	3063	584	0	1409	1592	4327	3522	1945
50	8273	5331	8820	7833	7298	2004	4880	0	0	881	2358	1418	2785
51	8360	8688	7729	8488	8874	3981	5993	7591	397	0	2108	1777	2237
52	7591	8941	7888	8083									
53	4718	7213	8558	7822	7991	8371	8184	8480	8524	2859	0	365	3081
54	3349	7477	8598	7400	8115	2485	3103	8115	5491	5178	0	1807	1735
55	3267	5762	8986	6222	8867	8868	6487	1328	5475	1902	0	0	2817
56	492	5793	8037	7187	6930	8329	7867	8997	535	0	0	1851	3180
57	9475	4848	7708	8034	7037	6175	4011	3221	197	0	0	3134	1295
58	5479	7100	6506	8470	7598	7911	8383	5724	421	0	0	1871	2908
59	7312	3824	3008	6389	8788	5977	7028	3172	0	0	3155	2538	2088
60	0	0	0	0	5482	2613	5039	2489	0	0	0	0	1153
61	0	0	0	0	0	0	3323	2148	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0	1231	0
65	0	0	0	0	0	0	0	0	0	98	0	0	0
66	0	0	0	0	0	0	0	0	0	0	3475	0	0

+	27	28	29	30	31	32	33	34	35	36	37	38	39
3	0	0	1998	2593	1741	3203	3634	1695	2388	4592	5551	5876	3594
4	0	0	6298	5401	2673	6265	8540	4854	8174	6875	7512	5835	1784
5	0	1770	6237	5044	6445	3718	2749	4103	5732	2185	228	361	10
6	0	6529	2097	4488	7672	6331	4351	5700	5837	502	10	355	1304
7	4431	2235	1944	1444	1103	5193	6084	5837	2290	10	10	10	1596
8	4925	856	428	1200	3258	7895	7094	5235	10	10	10	1377	5399
9	3321	2413	6707	8530	8525	6806	6881	1233	20	20	2138	1268	10
10	6101	8882	7780	5167	8034	2086	20	20	20	1139	1677	913	1525
11	9348	9343	7213	8155	5780	20	20	20	20	2724	20	1920	0
12	8494	7038	7623	8097	5289	20	20	1518	1633	2749	0	0	0
13	8127	6252	5420	6829	1946	20	1248	20	2993	2559	20	0	0
14	5920	6975	5729	5758	572	20	20	1824	3694	2051	0	0	0
15	5913	3865	2316	888	20	10	1295	3892	10	1226	10	1351	1108
16	6605	7713	5537	950	230	10	3724	7137	3950	10	850	1070	2338

17	5002	5000	362	593	378	1271	5735	6474	676	632	628	1341	1689
18	5815	2855	600	5938	10	5557	9135	6089	380	1190	588	1483	3937
19	8983	4488	370	60	1444	7931	8831	7323	2490	555	841	2080	3734
20	6452	6538	5334	2118	5283	6288	6745	4511	1348	345	543	983	1050
21	5292	8838	4493	4351	3170	2858	1871	1824	894	998	0	1953	3371
22	7464	7435	7648	7143	3995	6552	4680	1100	0	1207	2536	4158	1848
23	6743	8315	7944	5870	1117	5743	5277	4118	423	1303	1954	4576	4377
24	8073	8251	6694	6437	700	7810	4285	3558	437	2255	3501	5040	5612
25	8077	7901	7515	4425	881	6313	5338	3962	811	1594	6341	4893	4381
26	7327	7183	7181	3086	3033	7201	4918	2301	2287	4104	2811	4968	3018
27	8880	8028	8044	2572	2744	4840	2848	4572	3538	5937	3308	1639	3352
28	8584	8968	8013	2683	2385	5589	4658	6362	3184	1958	10	10	10
29	7204	8363	8305	7093	5883	6084	6524	6868	4372	10	2321	1759	1055
30	8883	7890	7805	10	8070	6211	6125	1580	870	10	1818	1043	1138
31	8481	8842	8378	10	4674	6480	5218	4380	4182	4240	4789	3847	683
32	9747	9176	6763	417	5883	4133	3249	6334	2957	1807	3888	2609	2170
33	9810	6754	4295	1004	3151	4345	5823	5082	3886	3164	4425	5120	339
34	9190	7641	7322	975	10	5572	8883	8531	6222	6259	6243	7632	1905
35	8005	6403	476	10	10	1244	1770	3310	4636	5659	9574	3088	1839
36	3877	8533	10	10	1353	6744	4615	5782	8572	7763	4306	2190	1918
37	3955	3893	3500	10	1052	1788	3311	3293	3946	158	4701	2571	10
38	2242	5269	1133	907	10	3097	912	1864	2002	2095	2187	10	10
39	3911	1349	1087	10	1324	881	1513	785	1864	10	2491	483	10
40	6209	2744	10	1841	1371	10	10	1822	1448	10	1918	10	10
41	3918	3539	1334	2002	1884	10	2210	2197	10	10	10	0	0
42	3954	2588	2005	2411	1882	10	2388	1487	1081	0	0	0	0
43	3918	3200	2805	1005	1272	1812	1849	1492	10	0	0	0	0
44	4045	10	2423	1528	10	1500	10	0	0	0	0	0	0
45	3540	2901	3312	10	10	10	10	0	0	0	0	0	0
46	2029	2101	1710	2484	1349	10	10	0	0	0	0	0	0
47	1998	748	1554	1808	10	10	10	0	0	0	0	0	0
48	1571	10	1711	1828	1858	10	2541	10	0	0	0	0	0
49	1731	1588	3707	3098	2853	10	40	0	0	0	0	0	0
50	1247	2912	5974	2858	1808	1942	10	0	0	0	0	0	0
51	3273	5942	3045	2308	2810	10	10	0	0	0	0	0	0
52	4141	6175	2847	1284	1454	0	0	0	0	0	0	0	0
53	3818	3209	2094	0	0	0	0	0	0	0	0	0	0
54	1884	2377	0	0	0	0	0	0	0	0	0	0	0
55	946	0	0	0	0	0	0	0	0	0	0	0	0

+	40	41	42	43	44	45	46	47	48	49	50	51	52
3	10	0	0	0	0	0	0	0	0	0	0	0	0
4	2419	0	0	0	0	0	0	0	0	0	0	0	0
5	2613	1782	0	0	0	0	0	0	0	0	0	0	0
6	2390	2312	0	0	0	0	0	0	0	0	0	0	0
7	1587	10	0	0	0	0	0	0	0	0	0	0	0
8	885	10	0	0	0	0	0	0	0	0	0	0	0
9	10	0	0	0	0	0	0	0	0	0	0	0	0
15	1235	10	1304	1828	10	1732	1872	1820	1017	10	0	0	0
16	1087	304	1028	2800	1283	2187	10	1445	10	10	10	0	0
17	1711	581	1797	1765	1408	2288	10	10	514	0	0	0	0
18	3032	853	2855	3090	1154	1702	10	10	10	590	0	0	0
19	2252	1791	3524	3412	1189	1853	1395	890	781	0	0	0	0
20	2231	3585	5180	3881	2353	940	10	10	0	0	0	0	0
21	1882	2624	1242	2111	1843	0	0	0	0	0	0	0	0
22	3142	3879	4843	2158	678	10	0	0	0	0	0	0	0
23	2741	4834	3419	1729	10	1173	0	0	0	0	0	0	0
24	2618	4792	4739	2753	2244	10	0	0	0	0	0	0	0
25	4875	2057	2906	752	10	10	0	0	0	0	0	0	0
26	2507	2449	10	10	0	0	0	0	0	0	0	0	0
27	2052	10	10	10	0	0	0	0	0	0	0	0	0
28	798	10	10	10	0	0	0	0	0	0	0	0	0
29	2815	10	10	0	0	0	0	0	0	0	0	0	0
30	632	597	10	0	0	0	0	0	0	0	0	0	0
31	998	808	71	0	0	0	0	0	0	0	0	0	0
32	2915	3151	10	0	0	0	0	0	0	0	0	0	0
33	1228	1338	10	0	0	0	0	0	0	0	0	0	0
34	10	10	10	0	0	0	0	0	0	0	0	0	0
35	1908	0	0	0	0	0	0	0	0	0	0	0	0
36	1420	0	0	0	0	0	0	0	0	0	0	0	0

```
PARAMETER GWAD(I,J)    1990 GROUNDWATER DEMAND (ACRE-FT PER YEAR),
          MAI(I,J)     1990 MUNICIPAL AND INDUSTRIAL GROUNDWATER DEMAND (ACRE-FT PER YEAR),
          TOTGWMI      AREA TOTAL GROUNDWATER DEMAND OF NON-ARKANSAS CELLS (ACRE-FT PER YEAR),
          TOTWADA      1990 AREA TOTAL AGRICULTURAL DEMAND (ACRE-FT PER YEAR),
          TOTWADD      AREA TOTAL DEEP AQUIFER DEMAND (ACRE-FT PER YEAR),
          TOTWADS      AREA TOTAL SURFACE WATER DEMAND (ACRE-FT PER YEAR),
          TOTWADT      1990 AREA TOTAL WATER DEMAND (ACRE-FT PER YEAR);

        ATOP(I,J) = (ATOP(I,J) * CFATOP)$BOUN(I,J);
        BOTT(I,J) = (BOTT(I,J) * CFBOTT)$BOUN(I,J);
        CELO(I,J) = (CELO(I,J) * CFCELO)$BOUN(I,J);
        CINF(I,J) = (CINF(I,J) * CFCINF)$BOUN(I,J);
        ELEV(I,J) = (ELEV(I,J) * CFELEV)$BOUN(I,J);
        GWMI(I,J) = (GWMI(I,J) * CFGWMI)$BOUN(I,J);
        HYCN(I,J) = (HYCN(I,J) * CFHYCN)$BOUN(I,J);
        DINF(I,J) = (DINF(I,J) * CFDINF)$BOUN(I,J);
        RIVC(I,J) = (RIVC(I,J) * CFRIVC)$BOUN(I,J);
        RCHL(I,J) = (RCHL(I,J) * CFRCHL)$BOUN(I,J);
        RIVS(I,J) = (RIVS(I,J) * CFRIVS)$BOUN(I,J);
        TOPD(I,J) = (TOPD(I,J) * CFTOPD)$BOUN(I,J);
        WADA(I,J) = (WADA(I,J) * CFWADA)$BOUN(I,J);
        WADD(I,J) = (WADD(I,J) * CFWADD)$BOUN(I,J);
        WADS(I,J) = (WADS(I,J) * CFWADS)$BOUN(I,J);
        WADT(I,J) = (WADT(I,J) * CFWADT)$BOUN(I,J);

        GWAD(I,J)                          = (WADT(I,J) + GWMI(I,J) - WADD(I,J) - WADS(I,J))$BOUN(I,J);
        GWAD(I,J)$(BOUN(I,J) LT 0.0
            OR GWAD(I,J) LT 0.0)           = 0.0;
        MAI(I,J)                           = (WADT(I,J) - WADA(I,J))$BOUN(I,J);
```

(Groundwater

deep aquifer

surface water demand

+ I

(No MAI in Missouri)

Total water demand in Arkansas

+ groundwater demand in Missouri

− deep use from the deep aquifer.

− SW use

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         MAI(I,J)$(MAI(I,J) LT 0.0)    = 0.0;
         TOTGWMI                       = SUM((I,J), GWMI(I,J)$(BOUN(I,J) AND GWMI(I,J))) + EPS;
         TOTWADA                       = SUM((I,J), WADA(I,J)$BOUN(I,J)) + EPS;
         TOTWADD                       = SUM((I,J), WADD(I,J)$BOUN(I,J)) + EPS;
         TOTWADS                       = SUM((I,J), WADS(I,J)$BOUN(I,J)) + EPS;
         TOTWADT                       = SUM((I,J), WADT(I,J)$BOUN(I,J)) + EPS;

PARAMETER B(I,J)   INITIAL SATURATED THICKNESS (FT),
          DTI(I,J),
          DTJ(I,J),
          TT(I,J);

          B(I,J)$(ATOP(I,J) GT ELEV(I,J)) = ELEV(I,J) - BOTT(I,J);
          B(I,J)$(ATOP(I,J) LE ELEV(I,J)) = ATOP(I,J) - BOTT(I,J);
          DTJ(I,J)$BOUN(I,J)              = HYCN(I,J) * SCFACV *
                                            2.0 * (B(I,J) * B(I,J+1)) / (B(I,J) + B(I,J+1));
          DTI(I,J)$BOUN(I,J)              = HYCN(I,J) * SCFACV *
                                            2.0 * (B(I,J) * B(I+1,J)) / (B(I,J) + B(I+1,J));
          TT(I,J)$BOUN(I,J)               = DTI(I,J) + DTI(I-1,J) + DTJ(I,J) + DTJ(I,J-1);

PARAMETER CEMAX(I,J)   MAXIMUM EFFLUENT,
          CEMIN(I,J)   MINIMUM EFFLUENT,
          SSWMAX(I,J)  MAXIMUM DIVERSION,
          SSWMIN(I,J)  MINIMUM DIVERSION,
          HMAX(I,J)    MAXIMUM HEAD,
          HMIN(I,J)    MINIMUM HEAD,
          RCHMAX(I,J)  MAXIMUM RECHARGE,
          RCHMIN(I,J)  MINIMUM RECHARGE,
          GUSMIN(I,J)  RECHARGE PROVIDED BY USGS,
          GPMAX(I,J)   MAXIMUM PUMPING,
          GPMIN(I,J)   MINIMUM PUMPING;

          CINF(I,J)                       = CINF(I,J) * SCFACV;
          DINF(I,J)                       = DINF(I,J) * SCFACV;
          CELO(I,J)                       = CELO(I,J) * SCFACV;
          SSWMIN(I,J)$BOUN(I,J)           = WADS(I,J) * SCFACV;
          SSWMAX(I,J)$(BOUN(I,J) NE 0
              AND IRIV(I,J) EQ 0)         = WADS(I,J) * SCFACV;
          SSWMAX(I,J)$(BOUN(I,J) NE 0
              AND IRIV(I,J) NE 0)         = (WADS(I,J) + GWAD(I,J)) * SCFACV;
          CEMIN(I,J)$(BOUN(I,J) AND
              IRIV(I,J) AND CELO(I,J))    = CELO(I,J);
          CEMAX(I,J)$(BOUN(I,J) AND
              IRIV(I,J) AND CELO(I,J))    = CEMIN(I,J) * 100;
          HMAX(I,J)$(BOUN(I,J) GT 0)      = SCFACL * TOPO(I,J);
          HMIN(I,J)$(BOUN(I,J) GT 0)      = SCFACL * (BOTT(I,J) + 20.0);
          HMAX(I,J)$(BOUN(I,J) LT 0)      = SCFACL * (ELEV(I,J) + ALLOWL);
          HMIN(I,J)$(BOUN(I,J) LT 0)      = SCFACL * (ELEV(I,J) - ALLOWL);
          RCHMIN(I,J)                     = - RCFAC * RCHL(I,J) * SCFACV;
          GUSMIN(I,J)                     = - RCHL(I,J);
          RCHMAX(I,J)$(BOUN(I,J) LT 0)    = 9999999.0;
          RCHMIN(I,J)$(BOUN(I,J) GT 0)    = (0.0 - ALLOWV) * SCFACV ;
          RCHMAX(I,J)$(BOUN(I,J) GT 0)    = (0.0 + ALLOWV) * SCFACV ;
          GPMIN(I,J)$(BOUN(I,J) LT 0)     = (0.0 - ALLOWV) * SCFACV ;
          GPMAX(I,J)$(BOUN(I,J) LT 0)     = (0.0 + ALLOWV) * SCFACV ;
          GPMIN(I,J)$(BOUN(I,J) GT 0)     = (MAI(I,J) - ALLOWV) * SCFACV;
          GPMAX(I,J)$(BOUN(I,J) GT 0)     = SCFACV * (GWAD(I,J) + ALLOWV);

VARIABLES CE(I,J)    EFFLUENT
          GP(I,J)    PUMPING
          H(I,J)     HEAD
          RCH(I,J)   RECHARGE
          SSW(I,J)   SURFACE WATER
          TPPS       TOTAL PUMPING PLUS SURFACE WATER

FREE VARIABLE TPPS;

POSITIVE VARIABLE CE(I,J), GP(I,J), H(I,J), SSW(I,J);

EQUATIONS CL(I,J)     LOWER LIMIT ON EFFLUENT
          CU(I,J)     UPPER LIMIT ON EFFLUENT
          GL(I,J)     LOWER LIMIT ON PUMPING
          GU(I,J)     UPPER LIMIT ON PUMPING
          HL(I,J)     LOWER LIMIT ON HEAD
          HU(I,J)     UPPER LIMIT ON HEAD
          RL(I,J)     LOWER LIMIT ON RECHARGE
          RU(I,J)     UPPER LIMIT ON RECHARGE
          SL(I,J)     LOWER LIMIT ON SURFACE WATER DIVERSION
          SU(I,J)     UPPER LIMIT ON SURFACE WATER IN NONRIVER CELL
          SUR(I,J)    UPPER LIMIT ON SURFACE PLUS GROUNDWATER IN RIVER CELL
          TSSE(I,J)   STEADY STATE CONSTRAINT
          YRIVB(K)    RIVER BALANCE FOR RIVER REACH K
          ZP          OBJECTIVE FUNCTION (SUM OF SURFACE WATER AND GROUNDWATER PUMPING);

          CL(I,J)$(BOUN(I,J)
              AND IRIV(I,J) AND CELO(I,J))..      CE(I,J) =G= CEMIN(I,J);
          CU(I,J)$(BOUN(I,J)
              AND IRIV(I,J) AND CELO(I,J))..      CE(I,J) =L= CEMAX(I,J);
          GL(I,J)$BOUN(I,J)..                     GP(I,J) =G= GPMIN(I,J);
          GU(I,J)$BOUN(I,J)..                     GP(I,J) =L= GPMAX(I,J);
          HL(I,J)$BOUN(I,J)..                      H(I,J) =G= HMIN(I,J);
          HU(I,J)$BOUN(I,J)..                      H(I,J) =L= HMAX(I,J);
          RL(I,J)$BOUN(I,J)..                    RCH(I,J) =G= RCHMIN(I,J);
          RU(I,J)$BOUN(I,J)..                    RCH(I,J) =L= RCHMAX(I,J);
          SL(I,J)$BOUN(I,J)..                    SSW(I,J) =G= SSWMIN(I,J);
          SU(I,J)$(BOUN(I,J)
              NE 0 AND IRIV(I,J) EQ 0)..         SSW(I,J) =L= SSWMAX(I,J);
          SUR(I,J)$(BOUN(I,J) NE 0
              AND IRIV(I,J) NE 0)..   GP(I,J) + SSW(I,J) =L= SSWMAX(I,J);
          TSSE(I,J)$BOUN(I,J)..
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F.D. Trans.

Constant Head cells

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      DTI(I,J) * H(I+1,J)$BBOUN(I+1,J) +
      DTI(I-1,J) * H(I-1,J)$BBOUN(I-1,J) +
      DTJ(I,J-1) * H(I,J-1)$BBOUN(I,J-1) +
      DTJ(I,J) * H(I,J+1)$BBOUN(I,J+1) -
      (TT(I,J) + SCFACV * RIVC(I,J)) * H(I,J)    =E= SCFACL * (GP(I,J) + RCH(I,J)) -
                                                     SCFACL * RIVS(I,J) * SCFACV * RIVC(I,J);

   YRIVB(K)..  SUM(KK, SUM((I,J),
      (SSW(I,J)$(IRKC(K,KK) EQ IRIV(I,J) AND
      IRKC(K,KK) GT 0) + (SCFACV / SCFACL) *
      RIVC(I,J) * (SCFACL * RIVS(I,J) - H(I,J))
      $(IRKC(K,KK) EQ IRIV(I,J) AND IRKC(K,KK)
      GT 0)))) + SUM((I,J), CE(I,J)$(CELO(I,J)
      GT 0.0 AND (IRIV(I,J) EQ IRCODE(K))))      =E= SUM(KL, SUM((IL,JL), (CINF(IL,JL) +
                                                     DINF(IL,JL))$(IRIV(IL,JL) EQ IRKC(K,KL)
                                                     AND IRKC(K,KL) GT 0)));

   ZP..                                    TPPS =E= SUM((I,J), (GP(I,J) + SSW(I,J))$BBOUN(I,J));

**** INITIALIZE PUMPING TO ITS LOWER BOUND
           GP.L(I,J)$BBOUN(I,J) = GPMIN(I,J);

MODEL CMA1990  /ALL/;
SOLVE CMA1990  MAXIMIZING TPPS USING NLP;

PARAMETER  BIND(I,J)         INDICATOR MATRIX FOR GAMSOP,
           BBOUN(I,J)        INDICATOR MATRIX (SAME AS BOUNDARY ARRAY),
           BITOT             TOTAL NUMBER OF CELLS IN THE STUDY AREA,
           BITOTC            TOTAL NUMBER OF CONSTANT HEAD CELLS IN THE STUDY AREA,
           BITOTNR           TOTAL NUMBER OF NONRIVER CELLS IN THE STUDY AREA,
           BITOTR            TOTAL NUMBER OF RIVER CELLS IN THE STUDY AREA,
           BITOTV            TOTAL NUMBER OF VARIABLE HEAD CELLS IN THE STUDY AREA,
           CCE(I,J)          EFFLUENT (ACRE-FT PER YEAR),
           CCET              TOTAL EFFLUENT (THOUSANDS OF ACRE-FT PER YEAR),
           CCETA             AVERAGE EFFLUENT (ACRE-FT PER YEAR PER EFFLUENT CELL),
           GGP(I,J)          OPTIMAL PUMPING (ACRE-FT PER YEAR),
           GGPF(I,J)         NEAREST LOWER INTEGER VALUE OF OPTIMAL PUMPING (ACRE-FT PER YEAR),
           HH(I,J)           OPTIMAL HEAD (FT),
           HHA               AVERAGE OPTIMAL HEAD (FT),
           HHL               LARGEST VALUE OF OPTIMAL HEAD (FT),
           HHS               SMALLEST VALUE OF OPTIMAL HEAD (FT),
           MAIT              TOTAL MUNICIPAL AND INDUSTRIAL DEMAND (ACRE-FT PER YEAR),
           MAIU(I,J)         VOLUME OF UNMET MUNICIPAL AND INDUSTRIAL DEMAND (ACRE-FT PER YEAR),
           MAIUT             TOTAL VOLUME OF UNMET MUNICIPAL AND INDUSTRIAL DEMAND (ACRE-FT PER YEAR),
           RRCH(I,J)         OPTIMAL RECHARGE (ACRE-FT PER YEAR),
           RRCHGUS(I,J)      RATIO OF OPTIMAL RECHARGE OVER USGS-SUPPLIED MINIMUM RECHARGE,
           RRCHGUSX          MAXIMUM RATIO OF RECHARGE OVER USGS-SUPPLIED MINIMUM RECHARGE,
           RRCHT             TOTAL RECHARGE (ACRE-FT PER YEAR),
           RRCHTA            AVERAGE RECHARGE (ACRE-FT PER YEAR PER RECHARGE CELL),
           SSSW(I,J)         SURFACE WATER (ACRE-FT PER YEAR),
           TAPP              TOTAL PUMPING PLUS SURFACE WATER (ACRE-FT PER YEAR),
           TOTGW             TOTAL GROUNDWATER PUMPING (ACRE-FT PER YEAR),
           TOTSW             TOTAL SURFACE WATER (ACRE-FT PER YEAR),
           TOTGWAD           TOTAL GROUNDWATER DEMAND (ACRE-FT PER YEAR),
           TOTSWAD           TOTAL SURFACE WATER DEMAND (ACRE-FT PER YEAR),
           TOTWAD            TOTAL WATER DEMAND (ACRE-FT PER YEAR),
           XRTAPP            RATIO OF TOTAL PUMPING PLUS SURFACE WATER OVER TOTAL WATER DEMAND,
           XRGP              RATIO OF TOTAL PUMPING OVER TOTAL GROUNDWATER DEMAND,
           XRSSW             RATIO OF SURFACE WATER OVER TOTAL SURFACE WATER DEMAND,
           ZDELEVH(I,J)      INITIAL HEAD MINUS OPTIMAL HEAD (FT),
           ZDELEVHA          AVERAGE OF INITIAL HEAD MINUS OPTIMAL HEAD (FT),
           ZDELEVHX          MINIMUM OF INITIAL HEAD MINUS OPTIMAL HEAD (FT),
           ZDELEVHY          MAXIMUM OF INITIAL HEAD MINUS OPTIMAL HEAD (FT),
           ZDRSH(I,J)        RIVER STAGE MINUS OPTIMAL HEAD (FT),
           ZDRSHA            AVERAGE OF RIVER STAGE MINUS OPTIMAL HEAD (FT),
           ZDTOPOH(I,J)      TOPOGRAPHICAL TOP MINUS OPTIMAL HEAD (FT),
           ZDTOPOHA          AVERAGE TOPOGRAPHICAL TOP MINUS OPTIMAL HEAD (FT),
           ZEXCESSW(I,J)     SURFACE WATER IN EXCESS OF SURFACE WATER DEMAND (ACRE-FT PER YEAR),
           ZEXCESWT          TOTAL SURFACE WATER IN EXCESS OF SURFACE WATER DEMAND (ACRE-FT PER YEAR),
           ZFSTHIC(I,J)      FINAL SATURATED THICKNESS (FT),
           ZFSTHICA          AVERAGE OF FINAL SATURATED THICKNESS (FT),
           ZFSTHICX          MINIMUM FINAL SATURATED THICKNESS (FT),
           ZFSTHICY          MAXIMUM FINAL SATURATED THICKNESS (FT),
           ZISTHICA          AVERAGE OF INITIAL SATURATED THICKNESS (FT),
           ZISTHICX          MINIMUM INITIAL SATURATED THICKNESS (FT),
           ZISTHICY          MAXIMUM INITIAL SATURATED THICKNESS (FT),
           ZGUSMINT          TOTAL OF USGS-SUPPLIED RECHARGE (ACRE-FT PER YEAR),
           ZTGGP(I,J)        TIGHT PUMPING (-) AT LOWER BOUND AND (+) AT UPPER BOUND (ACRE-FT PER YEAR),
           ZTHH(I,J)         TIGHT HEAD (-) AT LOWER BOUND AND (+) AT UPPER BOUND (FT),
           ZTRRCH(I,J)       TIGHT RECHARGE (-) AT LOWER BOUND AND (+) AT UPPER BOUND (ACRE-FT PER YEAR),
           ZTRXPGP(I,J)      PERCENTAGE REDUCTION IN PUMPING,
           ZTRXPGPA          AVERAGE PERCENTAGE REDUCTION IN PUMPING,
           ZTRXPT(I,J)       PERCENTAGE REDUCTION IN TOTAL WATER USE,
           ZTRXPTA           AVERAGE PERCENTAGE REDUCTION IN TOTAL WATER USE,
           ZUGPD(I,J)        UNSATISFIED GROUNDWATER DEMAND (ACRE-FT PER YEAR),
           ZUGPDT            TOTAL UNSATISFIED GROUNDWATER DEMAND (ACRE-FT PER YEAR),
           ZUGPDTA           AVERAGE UNSATISFIED GROUNDWATER DEMAND (ACRE-FT PER YEAR),
           ZUT(I,J)          VOLUME OF UNMET DEMAND TO COME FROM OTHER SOURCES (ACRE-FT PER YEAR),
           ZUTT              TOTAL VOLUME OF UNMET DEMAND TO COME FROM OTHER SOURCES (ACRE-FT PER YEAR),
           ZYCIIR(K)         INFLUENT FOR CELLS WITH IR CODE EQUAL TO K (ACRE-FT PER YEAR),
           ZYCIIRT           TOTAL INFLUENT FOR ALL RIVER CELLS (ACRE-FT PER YEAR),
           ZYGPAG(I,J)       OPTIMAL GROUNDWATER PUMPING LESS M&I DEMAND (ACRE-FT PER YEAR),
           ZYOIIR(K)         OVERLAND INFLOW FOR CELLS WITH IR CODE EQUAL TO K (ACRE-FT PER YEAR),
           ZYOIIRT           TOTAL OVERLAND INFLOW FOR ALL RIVER CELLS (ACRE-FT PER YEAR),
           ZYSAI(I,J)        STREAM-AQUIFER INTERFLOW (ACRE-FT PER YEAR),
           ZYSAIT            TOTAL STREAM-AQUIFER INTERFLOW (ACRE-FT PER YEAR),
           ZYSAIIR(K)        STREAM-AQUIFER INTERFLOW FOR CELLS WITH IR CODE EQUAL TO K (ACRE-FT PER YEAR),
           ZYSAIIRT          TOTAL STREAM-AQUIFER INTERFLOW FOR ALL RIVER CELLS (ACRE-FT PER YEAR),
           ZYSSWIR(K)        SURFACE WATER FOR CELLS WITH IR CODE EQUAL TO K (ACRE-FT PER YEAR),
           ZYSSWIRT          TOTAL SURFACE WATER FOR ALL RIVER CELLS (ACRE-FT PER YEAR),
           ZZCIIR(K)         INFLUENT FOR CELLS IN RIVER REACH K (ACRE-FT PER YEAR),
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ZZOIIR(K)         OVERLAND INFLOW FOR CELLS IN RIVER REACH K (ACRE-FT PER YEAR),
ZZSAIIR(K)        STREAM-AQUIFER INTERFLOW FOR CELLS IN RIVER REACH K (ACRE-FT PER YEAR),
ZZSSWIR(K)        SURFACE WATER FOR CELLS IN RIVER REACH K (ACRE-FT PER YEAR);

BIND(I,J)$(BOUN(I,J)
      NE 0)               = 1;
BITOT                     = SUM((I,J), BIND(I,J));
BITOTC                    = SUM((I,J), BIND(I,J)$(BOUN(I,J) LT 0));
BITOTNR                   = SUM((I,J), BIND(I,J)$(BOUN(I,J) NE 0 AND IRIV(I,J) EQ 0));
BITOTR                    = SUM((I,J), BIND(I,J)$(BOUN(I,J) NE 0 AND IRIV(I,J) NE 0));
BITOTV                    = SUM((I,J), BIND(I,J)$(BOUN(I,J) GT 0));
CCE(I,J)$BOUN(I,J)        = CE.L(I,J) * (1.0 / SCFACV) + EPS;
CCET                      = SUM((I,J), CCE(I,J)) / 1000.0;
CCETA                     = CCET / SUM((I,J), BIND(I,J)$CELO(I,J));
GGP(I,J)$BOUN(I,J)        = GP.L(I,J) * (1.0 / SCFACV) + EPS;
GGPF(I,J)$BOUN(I,J)       = FLOOR(GP.L(I,J) * (1.0 / SCFACV)) + EPS;
HH(I,J)$BOUN(I,J)         = H.L(I,J) * (1.0 / SCFACL) + EPS;
HHL                       = SMAX((I,J)$BIND(I,J), HH(I,J));
HHS                       = SMIN((I,J)$BIND(I,J), HH(I,J));
HHA                       = SUM((I,J), HH(I,J)$BOUN(I,J)) / BITOT;
MAIT                      = SUM((I,J), MAI(I,J)$BOUN(I,J));
MAIU(I,J)$BOUN(I,J)       = (MAI(I,J) - GGP(I,J))$(MAI(I,J) GT GGP(I,J)) + EPS;
MAIUT                     = SUM((I,J), MAIU(I,J)$BOUN(I,J));
RRCH(I,J)$BOUN(I,J)       = RCH.L(I,J) * (1.0 / SCFACV) + EPS;
RRCHGUS(I,J)$(BOUN(I,J)
      LT 0)               = RRCH(I,J) / GUSMIN(I,J);
RRCHGUSX                  = SMAX((I,J), RRCHGUS(I,J)$(BOUN(I,J) LT 0.0));
RRCHT                     = SUM((I,J), RRCH(I,J)$BOUN(I,J));
RRCHTA                    = RRCHT / BITOTC;
SSSW(I,J)$BOUN(I,J)       = SSW.L(I,J) * (1.0 / SCFACV) + EPS;
TAPP                      = TPPS.L * (1.0 / SCFACV);
TOTGW                     = SUM((I,J), GGP(I,J)$BOUN(I,J));
TOTSW                     = SUM((I,J), SSSW(I,J)$BOUN(I,J));
TOTGWAD                   = SUM((I,J), GWAD(I,J)$BOUN(I,J));
TOTSWAD                   = SUM((I,J), WADS(I,J)$BOUN(I,J));
TOTWAD                    = SUM((I,J), (GWAD(I,J) + WADS(I,J))$BOUN(I,J));
XRTAPP                    = TAPP / TOTWAD;
XRGP                      = TOTGW / TOTGWAD;
XRSSW                     = TOTSW / TOTSWAD;
ZDELEVH(I,J)$BOUN(I,J)    = ELEV(I,J) - H.L(I,J) * (1.0 / SCFACL) + EPS;
ZDELEVHA                  = SUM((I,J), ZDELEVH(I,J)$BOUN(I,J)) / BITOT;
ZDELEVHX                  = SMIN((I,J)$BIND(I,J), ZDELEVH(I,J));
ZDELEVHY                  = SMAX((I,J)$BIND(I,J), ZDELEVH(I,J));
ZDRSH(I,J)$BOUN(I,J)      = RIVS(I,J) -H.L(I,J) * (1.0 / SCFACL) + EPS;
ZDRSHA                    = SUM((I,J), ZDRSH(I,J)$BOUN(I,J)) / BITOT;
ZDTOPOH(I,J)$BOUN(I,J)    = TOPO(I,J) - H.L(I,J) * (1.0 / SCFACL) + EPS;
ZDTOPOHA                  = SUM((I,J), ZDTOPOH(I,J)$BOUN(I,J)) / BITOT;
ZEXCESSW(I,J)$BOUN(I,J)   = (SSW.L(I,J) * (1.0 / SCFACV) - WADS(I,J)) + EPS;
ZEXCESWT                  = SUM((I,J), ZEXCESSW(I,J)$BOUN(I,J));
ZFSTHIC(I,J)$BOUN(I,J)    = H.L(I,J) * (1.0 / SCFACL) - BOTT(I,J) + EPS;
ZFSTHICA                  = SUM((I,J), ZFSTHIC(I,J)$BOUN(I,J)) / BITOT;
ZFSTHICX                  = SMIN((I,J)$BIND(I,J), ZFSTHIC(I,J));
ZFSTHICY                  = SMAX((I,J)$BIND(I,J), ZFSTHIC(I,J));
ZISTHICA                  = SUM((I,J), B(I,J)$BOUN(I,J)) / BITOT;
ZISTHICX                  = SMIN((I,J)$BIND(I,J), B(I,J));
ZISTHICY                  = SMAX((I,J)$BIND(I,J), B(I,J));
ZGUSMINT                  = SUM((I,J), GUSMIN(I,J)$BOUN(I,J));
ZTGGP(I,J)$BOUN(I,J)      = - GGP(I,J)$(GP.L(I,J) EQ GPMIN(I,J));
ZTGGP(I,J)$BOUN(I,J)      = GGP(I,J)$(GP.L(I,J) EQ GPMAX(I,J));
ZTHH(I,J)$BOUN(I,J)       = - HH(I,J)$(H.L(I,J) EQ HMIN(I,J));
ZTHH(I,J)$BOUN(I,J)       = HH(I,J)$(H.L(I,J) EQ HMAX(I,J));
ZTRRCH(I,J)$BOUN(I,J)     = - RRCH(I,J)$(RCH.L(I,J) EQ RCHMIN(I,J));
ZTRRCH(I,J)$BOUN(I,J)     = RRCH(I,J)$(RCH.L(I,J) EQ RCHMAX(I,J));
ZTRXPGP(I,J)$BOUN(I,J)    = 0.0;
ZTRXPGP(I,J)$(BOUN(I,J)
      AND GWAD(I,J))      = ((GWAD(I,J) - GGP(I,J)) / GWAD(I,J)) * 100.0;
ZTRXPGP(I,J)$BOUN(I,J)    = ZTRXPGP(I,J) + EPS;
ZTRXPGPA                  = SUM((I,J), ZTRXPGP(I,J)) / SUM((I,J),
                            BIND(I,J)$(GWAD(I,J) GT 0 AND BOUN(I,J) NE 0)) ;
ZTRXPT(I,J)$BOUN(I,J)     = 0.0;
ZTRXPT(I,J)$(BOUN(I,J)
      AND (WADS(I,J)
      OR GWAD(I,J)))      = (((WADS(I,J) + GWAD(I,J)) - (SSSW(I,J) + GGP(I,J))) /
                            (WADS(I,J) + GWAD(I,J))) * 100.0;
ZTRXPT(I,J)$BOUN(I,J)     = ZTRXPT(I,J) + EPS;
ZTRXPTA                   = SUM((I,J), ZTRXPT(I,J)) / SUM((I,J),
                            BIND(I,J)$((WADS(I,J) + GWAD(I,J)) GT 0 AND BOUN(I,J) NE 0));
ZUGPD(I,J)$BOUN(I,J)      = GWAD(I,J) - GGP(I,J);
ZUGPDT                    = SUM((I,J), ZUGPD(I,J)$BOUN(I,J));
ZUGPDTA                   = ZUGPDT / SUM((I,J), BIND(I,J)$(GWAD(I,J) GT 0 AND BOUN(I,J) NE 0)$BOUN(I,J));
ZUT(I,J)$BOUN(I,J)        = WADS(I,J) + GWAD(I,J) - (SSSW(I,J) + GGP(I,J)) + EPS;
ZUTT                      = SUM((I,J), ZUT(I,J)$BOUN(I,J));
ZYCIIR(K)                 = SUM((I,J), CINF(I,J) * (1.0 / SCFACV)$(IRIV(I,J) EQ IRCODE(K))) + EPS;
ZYCIIRT                   = SUM(K, ZYCIIR(K)) + EPS;
ZYGPAG(I,J)$BOUN(I,J)     = (GGP(I,J) - MAI(I,J))$(GGP(I,J) GT MAI(I,J)) + EPS;
ZYOIIR(K)                 = SUM((I,J), OINF(I,J) * (1.0 / SCFACV)$(IRIV(I,J) EQ IRCODE(K))) + EPS;
ZYOIIRT                   = SUM(K, ZYOIIR(K)) + EPS;
ZYSAI(I,J)$BOUN(I,J)      = RIVC(I,J) * (HH(I,J) - RIVS(I,J)) + EPS;
ZYSAIT                    = SUM((I,J), ZYSAI(I,J)$BOUN(I,J)) + EPS;
ZYSAIIR(K)                = SUM((I,J), ZYSAI(I,J)$(IRIV(I,J) EQ IRCODE(K))) + EPS;
ZYSAIIRT                  = SUM(K, ZYSAIIR(K)) + EPS;
ZYSSWIR(K)                = SUM((I,J), SSSW(I,J)$(IRIV(I,J) EQ IRCODE(K))) + EPS;
ZYSSWIRT                  = SUM(K, ZYSSWIR(K)) + EPS;
ZZCIIR(K)                 = SUM(KK, SUM((I,J),
                            CINF(I,J) * (1.0 / SCFACV)$(IRKC(K,KK) EQ IRIV(I,J)
                            AND IRKC(K,KK) GT 0))) + EPS;
ZZOIIR(K)                 = SUM(KK, SUM((I,J),
                            OINF(I,J) * (1.0 / SCFACV)$(IRKC(K,KK) EQ IRIV(I,J)
                            AND IRKC(K,KK) GT 0))) + EPS;
ZZSAIIR(K)                = SUM(KK, SUM((I,J),
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                                        ZYSAI(I,J)$(IRKC(K,KK) EQ IRIV(I,J)
                                        AND IRKC(K,KK) GT 0))) + EPS;
ZZSSWIR(K)                            = SUM(KK, SUM((I,J),
                                        SSSW(I,J)$(IRKC(K,KK) EQ IRIV(I,J)
                                        AND IRKC(K,KK) GT 0))) + EPS;

B(I,J)          = B(I,J) + EPS;               BIND(I,J)       = BIND(I,J) + EPS;
BBOUN(I,J)      = BOUN(I,J) + EPS;            CCE(I,J)        = CCE(I,J) + EPS;
GGP(I,J)        = GGP(I,J) + EPS;             GGPF(I,J)       = GGPF(I,J) + EPS;
GUSMIN(I,J)     = GUSMIN(I,J) + EPS;          GWAD(I,J)       = GWAD(I,J) + EPS;
HH(I,J)         = HH(I,J) + EPS;              IRIV(I,J)       = IRIV(I,J) + EPS;
MAI(I,J)        = MAI(I,J) + EPS;             MAIU(I,J)       = MAIU(I,J) + EPS;
RRCH(I,J)       = RRCH(I,J) + EPS;            RRCHGUS(I,J)    = RRCHGUS(I,J) + EPS;
SSSW(I,J)       = SSSW(I,J) + EPS;            ZDELEVH(I,J)    = ZDELEVH(I,J) + EPS;
ZDRSH(I,J)      = ZDRSH(I,J) + EPS;           ZDTOPOH(I,J)    = ZDTOPOH(I,J) + EPS;
ZEXCESSW(I,J)   = ZEXCESSW(I,J) + EPS;        ZFSTHIC(I,J)    = ZFSTHIC(I,J) + EPS;
ZTGGP(I,J)      = ZTGGP(I,J) + EPS;           ZTHH(I,J)       = ZTHH(I,J) + EPS;
ZTRRCH(I,J)     = ZTRRCH(I,J) + EPS;          ZTRXPGP(I,J)    = ZTRXPGP(I,J) + EPS;
ZTRXPT(I,J)     = ZTRXPT(I,J) + EPS;          ZUGPD(I,J)      = ZUGPD(I,J) + EPS;
ZUT(I,J)        = ZUT(I,J) + EPS;             ZYGPAG(I,J)     = ZYGPAG(I,J) + EPS;
ZYSAI(I,J)      = ZYSAI(I,J) + EPS;           ZYCIIR(K)       = ZYCIIR(K) + EPS;
ZYDIIR(K)       = ZYDIIR(K) + EPS;            ZYSAIIR(K)      = ZYSAIIR(K) + EPS;
ZYSSWIR(K)      = ZYSSWIR(K) + EPS;           ZZCIIR(K)       = ZZCIIR(K) + EPS;
ZZDIIR(K)       = ZZDIIR(K) + EPS;            ZZSAIIR(K)      = ZZSAIIR(K) + EPS;
ZZSSWIR(K)      = ZZSSWIR(K) + EPS;
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TABLE AAPR(I,J) 1990 APR AGRI AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12	13
35	0	0	0	0	0	0	0	0	0	44	0	0	0
36	0	0	0	0	0	0	0	0	0	88	0	0	0
37	0	0	0	0	0	0	0	0	0	0	20	30	0
38	0	0	0	0	0	0	23	6	109	19	11	46	47
39	0	0	0	0	0	0	0	14	21	192	135	318	172
40	0	0	0	0	4	4	12	11	3	10	19	212	26
41	0	0	0	0	12	14	145	175	142	88	92	14	13
42	0	0	13	18	71	171	298	558	130	78	68	83	37
43	0	0	0	7	148	191	738	204	157	198	36	57	40
44	0	0	0	0	93	43	434	163	58	59	65	35	37
45	0	0	0	15	41	138	279	665	375	48	39	74	19
46	0	0	0	5	45	84	120	175	621	93	50	40	55
47	0	0	6	0	23	50	191	0	21	22	0	49	28
48	0	0	0	10	57	0	64	58	71	0	97	79	82
49	0	0	0	33	90	62	0	0	80	68	78	49	21
50	0	0	0	0	100	73	86	111	0	193	111	185	11
51	0	0	0	0	65	63	22	28	157	55	107	56	77
52	0	0	0	0	81	31	54	88	81	74	104	44	15
53	0	0	0	c	0	82	60	88	43	67	125	16	0
54	0	0	0	0	0	3	47	22	0	68	54	11	10
55	0	0	0	0	0	0	0	0	0	212	30	12	0
56	0	0	0	0	0	0	0	0	0	13	25	56	63
57	0	0	0	0	0	0	0	0	0	0	11	10	44

+	14	15	16	17	18	19	20	21	22	23	24	25	26
9	0	0	0	0	0	0	0	0	0	0	0	14	0
10	0	0	0	0	0	0	0	0	0	0	8	0	0
11	0	0	0	0	0	0	0	0	0	0	5	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	3
14	0	0	0	0	0	0	0	0	0	0	0	0	52
15	0	0	0	0	0	0	0	0	0	0	3	0	0
18	0	0	0	0	0	0	60	0	0	0	0	0	1
19	0	0	0	0	0	0	0	7	0	0	0	0	0
20	0	0	0	0	0	0	0	0	45	40	0	0	0
22	0	0	0	0	0	0	0	120	0	0	1	6	0
23	0	0	0	0	0	0	0	0	0	0	28	26	4
24	0	0	0	0	7	0	7	0	0	0	78	0	0
25	0	0	0	0	0	0	0	0	0	22	0	46	0
26	0	0	0	0	0	0	0	5	0	0	2	52	0
27	0	0	0	0	0	0	0	0	0	7	0	0	0
28	0	0	28	0	0	0	0	0	5	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	8	0	0
34	0	0	0	0	0	0	0	0	0	4	0	0	0
35	0	0	0	0	0	0	0	0	0	1	0	0	0
36	27	8	41	0	0	0	0	0	33	27	0	0	0
37	60	10	0	0	24	0	0	0	5	0	0	0	0
38	18	14	0	27	57	0	0	0	40	0	0	0	0
39	21	83	4	8	29	0	21	31	61	0	0	0	0
40	233	347	19	23	27	11	11	86	33	110	75	71	66
41	13	0	16	0	7	12	8	110	71	38	81	47	44
42	85	8	4	14	15	0	62	70	81	38	40	49	37
43	58	28	286	289	10	28	71	58	139	36	38	45	37
44	37	45	115	111	0	0	55	54	77	104	88	50	50
45	38	29	27	81	13	0	35	37	36	37	17	54	57
46	77	33	23	36	18	0	27	294	34	34	20	22	48
47	57	63	42	38	35	3	0	8	28	145	23	25	15
48	41	46	40	47	28	8	0	0	51	235	364	28	0
49	42	36	39	42	31	17	2	0	0	15	38	39	16
50	48	30	50	44	29	11	20	0	0	0	18	11	22
51	45	48	44	47	38	22	24	45	2	0	21	8	10
52	42	39	44	45	41	44	22	62	46	3	0	0	23
53	45	40	48	42	46	35	49	51	61	18	0	0	33
54	0	50	48	41	45	14	19	138	33	31	0	21	0
55	24	56	51	35	49	48	32	8	33	19	0	0	31
56	9	64	46	40	39	46	48	42	3	0	0	17	42
57	22	52	48	24	39	34	24	19	0	0	0	41	23
58	30	63	47	38	45	44	39	36	3	0	0	9	27
59	64	0	0	52	49	33	42	19	0	0	28	15	37
60	0	0	0	0	38	15	38	15	0	0	0	0	0
61	0	0	0	0	0	0	0	15	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0	12	0
66	0	0	0	0	0	0	0	0	0	0	155	0	0

+	27	28	29	30	31	32	33	34	35	36	37	38	39
4	0	0	0	0	0	4	0	0	0	0	0	0	0
5	0	0	0	0	23	0	0	0	0	0	0	0	0
6	0	0	0	24	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	5
8	8	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	8	0	0	0	0	0	0	0	0	0	0
11	0	16	11	0	0	0	0	0	0	0	0	0	0
12	4	1	0	0	0	0	0	30	0	89	0	0	0
13	0	0	0	0	0	0	28	0	94	174	0	0	0
14	5	0	0	12	0	0	0	0	178	0	0	0	0
15	11	0	0	0	0	0	0	89	0	0	0	0	0
22	0	0	0	0	0	1	0	0	0	0	0	0	0
24	0	0	9	0	0	0	0	0	0	0	0	0	0
25	0	5	36	0	0	0	0	0	0	0	0	0	0
26	2	6	0	0	0	0	0	0	0	0	0	0	0
27	0	0	18	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	85	0	0	0	0
33	5	0	0	0	0	0	0	0	0	0	0	0	0
36	29	0	0	0	0	13	0	0	0	0	0	0	0
40	58	27	0	20	24	0	0	32	26	0	0	0	0
41	39	30	13	30	0	0	0	29	0	0	0	0	0
42	38	22	19	31	28	0	42	26	19	0	0	0	0
43	39	29	27	9	0	32	29	28	0	0	0	0	0
44	37	0	23	14	0	26	0	0	0	0	0	0	0
45	36	27	31	0	0	0	0	0	0	0	0	0	0
46	16	18	14	24	16	0	0	0	0	0	0	0	0
47	17	0	11	14	0	0	0	0	0	0	0	0	0
48	14	0	14	22	14	0	0	0	0	0	0	0	0
49	16	12	27	32	25	0	0	0	0	0	0	0	0
50	0	30	55	30	7	34	0	0	0	0	0	0	0
51	32	55	32	18	37	0	0	0	0	0	0	0	0
52	45	50	36	18	13	0	0	0	0	0	0	0	0
53	47	45	28	0	0	0	0	0	0	0	0	0	0
54	21	14	0	0	0	0	0	0	0	0	0	0	0

TABLE AMAY(I,J) 1990 MAY AGRI AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12	13
32	0	0	0	0	0	0	0	0	0	0	0	0	118
33	0	0	0	0	0	0	0	0	0	0	318	247	773
34	0	0	0	0	0	0	0	0	0	26	281	491	583
35	0	0	0	0	0	0	0	0	182	518	510	498	883
36	0	0	0	0	0	0	0	0	212	395	404	442	830
37	0	0	0	0	0	0	0	343	158	278	357	525	244
38	0	0	0	0	0	0	57	111	341	338	189	577	377
39	0	0	0	0	0	0	0	35	74	480	470	1044	752
40	0	0	0	0	73	30	51	52	80	181	251	840	449
41	0	0	0	0	82	90	572	802	1120	827	881	241	220
42	0	0	155	211	663	608	1536	1963	1010	908	795	1105	839
43	0	0	0	85	883	780	2179	915	968	1057	832	997	886
44	0	0	0	0	577	108	1428	948	979	984	730	398	555
45	0	0	0	170	480	829	1105	1570	1252	834	832	879	333
46	0	0	0	57	530	977	788	843	1759	744	877	705	872
47	0	0	69	328	289	535	938	442	529	467	495	789	448
48	0	0	0	118	663	429	825	672	825	527	884	849	745
49	0	0	0	348	823	689	390	541	897	808	904	571	358
50	0	0	0	0	1170	850	1002	1287	1029	2255	1259	904	133
51	0	0	0	0	758	734	257	489	1835	638	898	550	618
52	0	0	0	0	949	360	833	765	945	857	1210	470	396
53	0	0	0	0	0	579	596	790	503	781	1458	190	298
54	0	0	0	0	0	38	549	257	0	770	634	128	115
55	0	0	0	0	0	0	0	0	0	2477	345	137	0
56	0	0	0	0	0	0	0	0	0	151	288	859	735
57	0	0	0	0	0	0	0	0	0	0	126	117	519

+	14	15	16	17	18	19	20	21	22	23	24	25	26
8	0	0	0	0	0	0	0	0	0	0	0	0	556
9	0	0	0	0	0	0	0	0	0	0	0	73	384
10	0	0	0	0	0	0	0	0	0	0	27	49	274
11	0	0	0	0	0	0	0	0	0	0	209	438	735
12	0	0	0	0	0	0	0	0	0	49	531	218	842
13	0	0	0	0	0	0	0	0	0	99	163	118	1087
14	0	0	0	0	0	0	0	0	157	52	902	850	1420
15	0	0	0	0	0	0	0	82	351	243	729	1065	1840
16	0	0	0	0	0	0	125	485	950	828	1210	1227	1107
17	0	0	0	0	0	0	333	1085	594	1081	1179	1087	842
18	0	0	0	0	0	0	798	339	493	388	851	772	1097
19	0	0	0	0	0	432	427	418	611	598	725	730	776
20	0	0	0	0	242	531	111	189	418	848	718	828	856
21	0	0	0	0	298	93	318	391	412	717	548	739	849
22	0	0	125	253	413	182	158	433	709	641	679	820	395
23	0	0	108	250	387	190	187	286	759	308	585	1388	650
24	0	0	432	702	774	335	166	704	846	653	1026	1019	989
25	0	0	0	257	697	279	196	773	459	610	555	1056	979
26	0	0	0	0	173	567	238	682	633	878	720	1099	857
27	0	0	0	84	358	410	188	365	285	685	770	1095	1148
28	0	0	0	149	480	481	613	676	590	787	717	1107	1252
29	0	0	146	348	385	392	383	675	844	770	875	125	428
30	0	164	392	238	331	270	349	408	872	599	882	751	831
31	250	273	325	0	286	666	323	413	517	703	622	809	750
32	1137	144	204	0	230	456	246	360	636	672	748	963	831
33	885	423	0	0	0	413	158	497	530	413	651	853	883
34	473	392	365	255	298	288	228	570	513	721	687	1039	856
35	522	683	260	302	244	240	444	538	453	751	523	256	104
36	476	147	476	269	253	126	332	501	566	855	703	1039	89
37	867	183	58	95	281	272	237	327	768	892	708	825	547
38	312	250	251	315	670	289	231	92	702	718	1064	1203	1167
39	367	636	138	73	336	172	368	250	675	170	169	164	230
40	1076	1261	335	263	319	131	185	864	584	811	1315	1249	1192

41	222	0	268	106	78	136	139	520	886	682	1063	826	773
42	683	141	74	158	263	0	728	820	970	672	702	857	647
43	500	449	1140	671	117	326	824	679	869	685	833	780	849
44	639	791	754	541	0	117	640	629	905	1004	807	884	875
45	673	498	466	484	155	0	617	851	629	651	302	837	897
46	1354	679	405	613	310	0	311	887	588	699	347	388	839
47	999	930	738	661	616	57	0	145	481	338	395	436	263
48	712	807	692	818	446	144	0	0	488	548	898	454	0
49	675	636	682	737	547	298	42	0	0	261	806	882	279
50	806	518	858	763	616	195	344	0	0	0	289	188	380
51	813	844	752	825	889	388	422	792	42	0	363	132	183
52	740	678	756	788	709	778	385	908	806	48	0	0	403
53	472	702	833	742	803	821	646	893	899	311	0	0	379
54	200	724	837	721	789	243	327	799	579	541	0	248	214
55	282	857	874	806	864	848	552	136	680	148	0	0	380
56	100	628	782	699	676	810	809	736	54	0	0	193	483
57	252	602	748	425	885	801	421	335	0	0	0	482	288
58	352	819	551	445	738	770	680	807	52	0	0	101	318
59	752	0	0	611	858	582	739	335	0	0	337	178	432
60	0	0	0	0	627	255	532	264	0	0	0	0	0
61	0	0	0	0	0	0	285	288	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0	139	0
68	0	0	0	0	0	0	0	0	0	0	285	0	0

+	27	28	29	30	31	32	33	34	35	36	37	38	39
3	0	0	333	433	290	538	808	318	341	704	943	1010	801
4	0	0	1027	819	447	881	1038	775	1281	1112	1238	820	258
5	0	208	827	758	971	481	373	525	800	203	0	0	0
6	0	868	343	895	1366	1127	.733	813	1070	82	0	0	0
7	482	317	343	258	195	884	1019	953	382	0	0	0	158
8	497	0	73	200	485	1326	1188	887	0	0	0	229	829
9	344	277	849	1090	1085	905	850	140	0	0	252	0	0
10	738	1251	1139	535	1021	300	0	0	0	59	82	0	288
11	1389	1570	1025	1028	837	0	0	0	0	345	0	257	0
12	1243	911	1087	1015	836	0	0	107	304	274	0	0	0
13	1184	723	888	831	138	0	104	0	488	624	0	0	0
14	872	1124	898	739	67	0	0	148	415	292	0	0	0
15	759	677	328	69	0	0	97	293	0	0	0	0	0
16	837	891	824	75	0	0	499	790	515	0	0	0	0
17	594	455	0	0	0	68	823	382	0	0	0	0	21
18	724	398	0	0	0	722	680	398	0	0	0	0	0
19	1175	317	0	0	48	543	1092	990	314	0	0	53	90
20	774	404	509	234	294	275	637	250	0	0	0	0	73
21	638	1150	433	589	386	0	0	0	0	0	0	328	104
22	938	849	856	821	584	878	852	75	0	90	379	115	122
23	818	1113	1064	885	157	897	760	557	41	167	235	886	461
24	1048	1105	801	971	59	1102	574	478	43	317	513	762	894
25	1071	1010	942	505	132	872	788	551	110	182	832	527	352
26	940	923	921	440	479	894	710	288	283	572	347	633	233
27	1148	1084	1078	414	203	891	428	718	519	913	489	198	258
28	889	1042	710	379	244	91	28	0	581	365	0	0	0
29	419	380	400	848	343	341	412	90	617	0	432	0	0
30	750	321	790	0	344	383	345	0	0	0	148	0	0
31	838	752	355	0	378	343	318	74	777	791	894	889	0
32	1039	831	212	0	340	0	356	0	513	274	654	488	404
33	913	582	291	98	327	388	565	0	520	452	798	956	0
34	831	790	400	24	0	388	349	0	981	1130	1169	1428	355
35	184	184	0	0	0	61	103	468	674	810	1808	575	361
36	42	330	0	0	197	452	371	463	1384	886	788	364	357
37	555	408	94	0	175	329	585	368	511	0	848	464	0
38	345	786	140	25	0	48	0	0	171	85	367	0	0
39	93	0	0	0	107	0	281	0	0	0	484	0	0
40	1150	469	0	342	282	0	0	375	298	0	328	0	0
41	678	520	220	351	331	0	384	335	0	0	0	0	0
42	889	379	332	357	307	0	483	302	222	0	0	0	0
43	678	518	485	155	198	373	339	307	0	0	0	0	0
44	645	0	401	252	0	309	0	0	0	0	0	0	0
45	931	481	535	0	0	0	0	0	0	0	0	0	0
46	287	317	242	427	281	0	0	0	0	0	0	0	0
47	294	0	194	251	0	0	0	0	0	0	0	0	0
48	248	0	242	381	240	0	0	0	0	0	0	0	0
49	283	213	460	585	445	0	0	0	0	0	0	0	0
50	0	522	963	528	118	400	0	0	0	0	0	0	0
51	555	959	553	319	434	0	0	0	0	0	0	0	0
52	528	705	418	208	151	0	0	0	0	0	0	0	0
53	552	523	339	0	0	0	0	0	0	0	0	0	0
54	250	180	0	0	0	0	0	0	0	0	0	0	0

+	40	41	42	43	44	45	46	47	48	49	50	51	52
4	404	0	0	0	0	0	0	0	0	0	0	0	0
5	202	207	0	0	0	0	0	0	0	0	0	0	0
6	81	0	0	0	0	0	0	0	0	0	0	0	0
7	180	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	44	0	0	0	0	0	0	0	0	0
17	45	0	0	0	0	87	0	0	0	0	0	0	0
18	30	84	69	43	0	65	0	0	0	0	0	0	0
19	52	142	157	72	0	92	0	0	0	0	0	0	0
20	80	102	333	204	165	104	0	0	0	0	0	0	0
21	77	94	0	375	0	0	0	0	0	0	0	0	0
22	143	209	648	178	0	0	0	0	0	0	0	0	0
23	266	635	432	199	0	0	0	0	0	0	0	0	0
24	192	450	397	179	244	0	0	0	0	0	0	0	0
25	445	187	293	0	0	0	0	0	0	0	0	0	0
26	197	237	0	0	0	0	0	0	0	0	0	0	0
27	114	0	0	0	0	0	0	0	0	0	0	0	0
32	544	568	0	0	0	0	0	0	0	0	0	0	0
35	358	0	0	0	0	0	0	0	0	0	0	0	0
36	264	0	0	0	0	0	0	0	0	0	0	0	0

TABLE AJUN(I,J) 1990 JUNE AGRI AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12	13
32	0	0	0	0	0	0	0	0	0	0	0	0	384
33	0	0	0	0	0	0	0	0	0	0	530	722	1548
34	0	0	0	0	0	0	0	0	0	225	618	973	1085
35	0	0	0	0	0	0	0	0	397	975	984	985	1389
36	0	0	0	0	0	0	0	0	464	648	631	890	1643
37	0	0	0	0	0	0	0	726	387	556	1129	1054	597
38	0	0	0	0	0	0	68	159	428	481	270	1001	662
39	0	0	0	0	0	13	0	43	124	578	620	1321	989
40	0	0	0	0	144	57	67	70	66	292	358	1092	642
41	0	0	0	0	113	186	788	1060	1548	1217	1201	344	314
42	0	0	221	302	837	778	2055	2508	1395	1276	1121	1579	913
43	0	0	0	122	1225	1023	2703	1286	1318	1418	903	1648	994
44	0	0	0	0	998	217	1859	1389	1389	1406	1140	972	1153
45	0	0	0	243	729	1181	1524	2827	2010	1191	905	1482	476
46	0	0	0	81	758	1395	1088	1215	2638	1042	1253	1008	1529
47	0	0	98	678	384	1008	1385	922	1058	927	1035	1098	841
48	0	0	0	168	947	896	893	959	1178	1101	1212	970	1038
49	0	0	0	551	1181	852	815	1130	985	1152	1292	815	525
50	0	0	0	0	1871	1215	1432	1852	2148	3222	1803	1335	190
51	0	0	0	47	1208	1049	387	698	2822	911	1454	1153	914
52	0	0	0	0	1356	514	904	1094	1350	1239	1728	676	881
53	0	0	0	0	0	1217	894	1128	719	1118	2084	381	843
54	0	0	0	0	0	64	785	367	0	1100	805	183	184
55	0	0	0	0	0	0	0	0	0	3593	492	234	0
56	0	0	0	0	0	0	0	0	172	371	411	941	1051
57	0	0	0	0	0	0	0	0	0	0	180	368	741

*	14	15	16	17	18	19	20	21	22	23	24	25	26
8	0	0	0	0	0	0	0	0	0	0	0	0	1180
9	0	0	0	0	0	0	0	0	0	0	0	141	744
10	0	0	0	0	0	0	0	0	0	0	53	147	677
11	0	0	0	0	0	0	0	0	0	0	390	1138	1704
12	0	0	0	0	0	0	0	0	0	239	911	601	1246
13	0	0	0	0	0	0	0	0	0	288	502	533	1906
14	0	0	0	0	0	0	0	0	384	231	1719	1501	2558
15	0	0	0	0	0	0	0	178	677	600	1348	1987	2812
16	0	0	0	0	0	0	256	895	1781	1540	2138	2188	2045
17	0	0	0	0	0	0	616	1874	1080	1890	2103	2083	1575
18	0	0	0	0	0	0	1325	684	940	708	1461	1587	2218
19	0	0	0	0	0	720	773	901	1167	1294	1254	1523	1849
20	0	0	0	0	403	824	368	620	972	1601	1369	1755	1891
21	0	0	0	0	497	308	770	987	858	1328	1371	1482	1277
22	0	0	208	871	724	304	467	808	1181	1089	1132	1408	613
23	0	0	258	418	688	317	311	443	1385	717	1128	2178	1013
24	0	0	720	1211	1590	556	282	1083	1278	1055	1923	1581	1648
25	0	0	0	473	1081	468	327	1331	814	1122	838	1735	1787
26	0	0	0	0	572	1022	516	1401	1315	1327	1453	1890	1428
27	0	0	0	140	684	1357	783	820	784	1420	1381	1888	1814
28	0	0	0	484	813	718	951	1451	1180	1428	1538	2227	2398
29	0	0	341	704	689	808	644	1389	1287	1391	1442	383	789
30	0	438	818	368	514	594	758	681	1042	1084	1137	1284	1388
31	800	828	831	0	444	1087	538	787	803	1171	1038	1348	1250
32	2141	353	454	0	432	836	409	850	1081	1120	1247	1808	1422
33	1558	704	0	0	100	963	283	930	1048	888	1090	1422	1388
34	871	808	834	398	528	644	330	884	1323	1206	1112	1732	1427
35	1008	1138	668	469	379	379	1178	1027	788	1185	872	891	239
36	1074	1083	881	418	382	188	653	838	850	1394	1171	2057	218
37	1239	438	118	199	402	422	394	544	1188	1164	1179	1537	1044
38	448	481	523	551	957	490	388	193	1003	1369	2288	2319	2451
39	624	881	287	104	486	287	600	376	992	848	898	678	1385
40	1525	1618	663	376	455	187	264	961	834	1118	1879	1784	1703
41	317	0	408	222	111	195	198	595	1288	845	1519	1180	1105
42	948	201	108	226	376	0	1041	1172	1391	960	1002	1224	825
43	747	641	1571	1102	188	468	1177	970	1188	1037	904	1114	828
44	1108	1490	1056	935	0	244	914	898	1323	1403	1117	1282	1250
45	982	713	885	870	563	0	881	930	888	930	432	1338	1425
46	2075	1180	679	875	442	0	444	883	840	858	498	684	1188
47	1588	1328	1054	845	880	82	0	249	702	435	664	623	375
48	1017	1153	988	1189	638	208	0	0	728	704	1151	648	0
49	988	907	875	1053	823	427	60	0	0	373	868	875	398
50	1182	741	1240	1091	737	279	492	0	0	0	412	282	578
51	1229	1240	1075	1178	858	554	803	1132	60	0	618	189	373
52	1057	985	1094	1125	1013	1112	550	1298	1151	68	0	0	752
53	702	1002	1190	1059	1148	887	934	1275	1285	444	0	0	642
54	418	1044	1195	1030	1128	347	458	1253	828	773	0	351	447
55	402	938	1249	888	1234	1208	1242	192	828	228	0	0	618
56	143	889	1117	899	984	1157	1158	1051	77	0	0	278	704
57	380	861	1074	807	979	858	601	478	0	0	0	688	383
58	603	884	788	638	1057	1101	971	868	78	0	0	148	780
59	1268	0	0	873	1223	832	1056	478	0	0	800	573	617
60	0	0	0	0	895	384	903	377	0	0	0	0	547
61	0	0	0	0	0	0	595	379	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0	287	0
65	0	0	0	0	0	0	0	0	0	12	0	0	0
66	0	0	0	0	0	0	0	0	0	0	563	0	0

*	27	28	29	30	31	32	33	34	35	36	37	38	39
3	0	0	616	800	538	988	1122	584	629	1299	1617	1732	1110
4	0	0	1896	1512	825	1777	1912	1430	2328	2053	2121	1577	472
5	0	444	1711	1348	1880	632	689	970	1477	340	0	0	0
6	0	1439	534	1207	2342	1933	1256	1685	1975	152	0	0	186
7	1071	712	588	438	334	1598	1881	1633	706	0	0	0	294
8	1100	46	125	368	898	2273	2194	1521	0	0	0	423	1568
9	814	653	1789	2278	2324	1903	1753	328	0	0	600	176	0
10	1692	2423	1957	1306	2229	594	0	0	0	250	151	0	450
11	2543	2849	1897	2248	1889	0	0	0	0	748	0	475	0
12	2134	1682	2282	2125	1340	0	0	317	582	535	0	0	0
13	1978	1684	1576	1777	610	0	312	0	777	720	0	0	0
14	1242	1982	1478	1539	124	0	0	536	551	540	0	0	0

15	1405	989	582	249	0	0	351	847	0	0	0	0	0
16	1545	2021	1498	270	0	0	1166	2111	1097	0	135	0	0
17	1244	1128	73	62	0	346	1641	1834	96	58	0	204	384
18	1375	828	76	0	0	1449	2389	1629	0	0	0	206	332
19	2335	1296	0	0	337	2147	2401	1812	585	0	0	236	247
20	1625	1792	1279	548	1180	1385	1279	975	0	0	0	0	134
21	1458	2404	1147	1051	816	251	0	0	0	0	0	602	179
22	1711	1804	1818	1368	1055	1548	1131	247	0	199	867	197	208
23	1359	1855	1774	1158	262	1433	1338	991	81	244	438	1187	791
24	1743	1842	1341	1853	188	1864	1003	842	84	492	798	1183	1189
25	1785	1688	1597	841	205	1494	1359	918	170	390	1366	817	804
26	1566	1539	1538	773	780	1734	1228	481	454	976	644	1083	399
27	1913	1808	1807	890	672	1152	853	1111	806	1418	727	304	438
28	1913	1819	1487	715	531	214	248	135	901	568	0	0	0
29	977	1385	1387	1446	568	584	591	140	1036	0	871	0	0
30	1250	1082	1389	0	584	597	804	144	0	0	243	0	0
31	1393	1317	1254	0	814	585	531	262	1206	1224	1387	1039	0
32	1774	1428	702	0	528	0	550	50	798	428	1015	755	827
33	1588	970	485	317	568	674	899	0	807	702	1235	1484	0
34	1388	1380	1387	79	0	802	809	0	1491	1753	1810	2213	550
35	299	324	112	0	0	95	159	723	891	1091	2808	893	580
36	421	1659	0	0	305	1045	859	718	2229	1442	1223	586	564
37	987	676	157	0	272	510	808	647	782	88	1313	721	0
38	814	1585	304	124	0	74	88	10	582	347	568	0	0
39	918	125	148	0	209	0	438	0	213	0	720	0	0
40	1843	889	0	488	403	0	0	538	425	0	509	0	0
41	889	1013	315	501	507	0	557	479	0	0	0	0	0
42	940	541	474	508	438	0	704	431	317	0	0	0	0
43	889	738	894	238	409	533	485	438	0	0	0	0	0
44	921	0	574	381	0	441	0	0	0	0	0	0	0
45	901	897	754	0	0	0	0	0	0	0	0	0	0
46	410	453	345	811	401	0	0	0	0	0	0	0	0
47	421	0	278	359	0	0	0	0	0	0	0	0	0
48	351	0	348	544	343	0	0	0	0	0	0	0	0
49	404	304	838	792	725	0	0	0	0	0	0	0	0
50	110	745	1575	754	188	572	0	0	0	0	0	0	0
51	792	1570	789	458	620	0	0	0	0	0	0	0	0
52	752	1284	778	297	215	0	0	0	0	0	0	0	0
53	789	747	484	0	0	0	0	0	0	0	0	0	0
54	357	583	0	0	0	0	0	0	0	0	0	0	0
55	243	0	0	0	0	0	0	0	0	0	0	0	0

+	40	41	42	43	44	45	46	47	48	49	50	51	52
4	748	0	0	0	0	0	0	0	0	0	0	0	0
5	546	382	0	0	0	0	0	0	0	0	0	0	0
6	334	330	0	0	0	0	0	0	0	0	0	0	0
7	295	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	10	0	0	0	0
13	0	0	0	142	0	0	0	12	0	0	0	0	0
17	180	0	129	0	0	317	0	0	0	0	0	0	0
18	190	144	402	200	0	120	0	0	0	0	0	0	0
19	188	243	289	245	0	158	0	0	0	0	0	0	0
20	147	175	570	348	282	179	0	0	0	0	0	0	0
21	133	181	0	842	0	0	0	0	0	0	0	0	0
22	244	358	1108	301	0	0	0	0	0	0	0	0	0
23	455	1088	741	341	0	28	0	0	0	0	0	0	0
24	329	771	680	305	419	0	0	0	0	0	0	0	0
25	764	287	502	0	0	0	0	0	0	0	0	0	0
26	337	408	0	0	0	0	0	0	0	0	0	0	0
27	186	0	0	0	0	0	0	0	0	0	0	0	0
32	844	882	0	0	0	0	0	0	0	0	0	0	0
35	551	0	0	0	0	0	0	0	0	0	0	0	0
36	408	0	0	0	0	0	0	0	0	0	0	0	0

TABLE AJUL(I,J) 1990 JULY AGRI AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12	13
32	0	0	0	0	0	0	0	0	0	0	0	0	590
33	0	0	0	0	0	0	0	0	0	0	624	985	2074
34	0	0	0	0	0	0	0	0	0	852	1011	1275	1484
35	0	0	0	0	0	0	0	0	576	1342	1334	1335	1907
36	0	0	0	0	0	0	0	0	840	752	1157	1136	2228
37	0	0	0	0	0	0	0	985	581	737	1563	1811	760
38	0	0	0	0	0	0	46	429	481	500	643	1795	1242
39	0	0	0	0	0	21	0	29	142	384	538	1461	1932
40	0	0	0	0	319	73	93	178	204	639	927	1471	1340
41	0	0	0	0	278	290	1156	2043	2153	2280	2190	918	858
42	0	0	230	511	2195	1133	2940	2854	2874	2908	2817	3347	1905
43	0	0	0	387	1868	1886	2710	2178	2418	2455	2037	2948	2075
44	0	0	0	134	2500	986	2210	2798	2847	2880	2530	1740	2080
45	0	0	0	462	1762	2114	2909	4560	3008	2870	2136	2733	1081
46	0	0	0	480	1671	2331	2119	1631	3431	1775	2818	2323	2888
47	0	0	187	1025	928	2785	2568	2272	2837	1834	2463	2488	1555
48	0	0	0	358	1558	1758	2087	2251	2208	2058	2585	1926	1922
49	0	0	0	964	1757	1889	1808	2989	2457	2110	2331	1943	1140
50	0	0	0	390	3120	1263	2918	3729	3714	4614	2884	2927	468
51	0	0	0	594	1893	1360	1300	3503	3798	3018	2573	2039	2721
52	0	0	0	0	2748	822	3635	3231	3927	2837	2783	2107	1811
53	0	0	0	0	282	3048	3627	3486	3633	3290	3748	862	1380
54	0	0	0	0	0	1420	3172	1517	3590	4000	3025	578	517
55	0	0	0	0	0	0	215	2488	2024	4203	512	864	0
56	0	0	0	0	0	0	0	0	2278	1950	3509	3321	2646
57	0	0	0	0	0	0	0	0	0	0	2723	2633	3408
58	0	0	0	0	0	0	0	0	0	0	0	0	1353

+	14	15	16	17	18	19	20	21	22	23	24	25	26
8	0	0	0	0	0	0	0	0	0	0	0	0	1391
9	0	0	0	0	0	0	0	0	0	0	0	167	811
10	0	0	0	0	0	0	0	0	0	0	84	261	733
11	0	0	0	0	0	0	0	0	0	0	414	1279	1902
12	0	0	0	0	0	0	0	0	0	286	1030	740	1504

13	0	0	0	0	0	0	0	0	0	326	759	821	2249
14	0	0	0	0	0	0	0	0	598	259	1877	1721	2897
15	0	0	0	0	0	0	0	278	736	722	1583	2305	2929
16	0	0	0	0	0	0	382	955	1975	1658	2405	2388	2426
17	0	0	0	0	0	0	641	1987	1272	2105	2327	2345	2033
18	0	0	0	0	0	0	1589	1474	1995	1357	2712	1682	2893
19	0	0	0	0	0	938	953	1590	2057	1855	2203	1820	2058
20	0	0	0	0	475	1222	521	784	1454	2855	2285	2034	1988
21	0	0	0	0	650	438	949	1283	1547	2287	2124	2014	1487
22	0	53	356	1072	1048	567	753	1411	2111	1987	1980	2618	822
23	0	0	453	545	821	474	832	882	2274	1447	1878	3120	1577
24	0	0	902	1487	2308	894	405	1481	1948	1841	2715	2440	2408
25	0	0	0	852	1998	988	552	2184	1551	1908	1399	2859	2701
26	0	0	0	0	898	1335	680	2188	1989	2181	2239	2893	2170
27	0	0	0	168	901	1850	1125	1378	1381	2189	2106	2527	2860
28	0	0	0	928	1218	1057	1257	2192	1882	2258	1918	3149	3314
29	0	0	803	1154	708	813	987	2204	1910	2284	2192	1915	1783
30	0	857	1102	431	699	867	1160	1224	1636	1648	1920	2590	2795
31	860	928	918	0	883	1591	788	1378	1253	2010	1678	2480	2887
32	3078	837	632	0	780	1711	881	1202	1830	1858	2088	2728	2919
33	2072	829	0	0	279	1738	478	1758	1723	1090	1838	2840	2924
34	1141	868	1208	468	784	904	865	1580	2258	2098	1949	3152	2903
35	1593	2048	979	798	802	894	1921	1713	1431	2070	1649	1332	589
36	1898	2808	708	1018	923	537	1080	1588	1818	2230	2010	2898	391
37	2690	1271	268	844	1112	951	1058	818	2080	2188	2095	2448	1808
38	1189	902	679	1401	2582	1289	1042	618	1597	2213	2918	3344	3349
39	1678	1728	855	250	1088	510	1256	718	1389	1771	1466	1293	1856
40	2168	2017	872	566	778	325	383	1321	1420	1378	2239	2138	2054
41	901	0	425	838	810	339	337	944	1909	1298	2569	1781	1470
42	1838	420	188	891	1057	0	1387	1773	1990	1318	1509	1900	1349
43	1532	1327	2190	1484	174	483	1533	1350	1885	1459	1362	1713	1354
44	2106	2885	1888	1521	0	284	1272	1250	1893	1947	1403	1809	1788
45	1985	1545	1481	1418	725	0	917	1275	1351	1278	878	1831	1814
46	3437	2194	1290	1490	577	0	825	1268	1572	1458	845	871	1384
47	2981	2543	2558	2005	1488	85	591	745	863	690	888	701	712
48	3083	2883	2557	3028	2364	832	0	0	794	988	1521	805	0
49	2913	944	2622	2725	2888	1103	221	0	651	525	1474	1118	858
50	2978	1918	3208	2820	2713	721	1814	0	0	333	875	481	975
51	3009	3125	2779	3049	2478	1434	2228	2710	141	0	758	781	924
52	2733	2498	2830	2810	2820	2577	2030	3072	2728	161	400	0	1058
53	1465	2595	3079	2741	2888	2294	2180	3017	3040	1058	0	152	1078
54	1081	2687	3093	2661	2923	893	1105	2640	1958	1849	0	640	878
55	1017	1788	3229	2237	3193	3128	2392	478	1951	651	0	0	901
56	148	2078	2890	2585	2498	3000	2734	2487	232	0	0	585	1085
57	2692	1755	2756	2240	2530	2224	1432	1151	79	0	0	1053	398
58	2242	2792	2425	2457	2725	2848	2278	2040	147	0	0	728	1023
59	2860	1631	1372	2340	3184	2152	2508	1131	0	0	1209	1035	842
60	0	0	0	0	1706	841	2158	852	0	0	0	0	443
61	0	0	0	0	0	0	1085	871	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0	488	0
65	0	0	0	0	0	0	0	0	0	60	0	0	0
66	0	0	0	0	0	0	0	0	0	0	827	0	0

+	27	28	29	30	31	32	33	34	35	36	37	38	39
3	0	0	641	833	858	1030	1159	808	733	1440	1741	1804	1156
4	0	0	1989	1887	859	1983	2072	1543	2570	2192	2337	1700	513
5	0	538	1938	1545	1945	1008	833	1227	1753	658	19	30	0
6	0	1934	680	1318	2440	2013	1361	1811	2159	159	0	30	402
7	1348	730	613	457	348	1682	1959	1810	736	0	0	0	365
8	1539	215	130	384	1008	2469	2285	1841	0	0	0	441	1731
9	902	721	2087	2848	2857	2170	1817	381	0	0	742	576	0
10	1884	2778	2352	1592	2521	640	0	0	0	358	421	201	479
11	2890	2959	2209	2571	1911	0	0	0	0	853	0	578	0
12	2557	2109	2454	2580	1570	0	0	390	585	728	0	0	0
13	2429	1970	1829	2072	624	0	381	0	796	598	0	0	0
14	1718	2188	1772	1757	140	0	0	567	936	587	0	0	0
15	1754	1168	895	257	0	0	380	1117	0	495	0	583	618
16	1969	2162	1809	289	19	0	1211	2188	1181	0	208	483	880
17	1541	1471	106	97	32	387	1771	2129	125	289	146	530	691
18	1738	865	179	0	0	1617	3382	1980	32	370	279	411	1282
19	2755	1477	31	0	448	2602	2780	2383	844	188	348	537	1202
20	1979	2120	1848	581	1808	2215	2589	1821	648	168	266	216	192
21	1664	2838	1398	1308	919	1118	843	882	347	499	0	627	852
22	2492	2481	2523	2311	1418	2192	1585	350	0	383	850	1048	494
23	2196	2748	2628	1850	372	1892	1819	1432	139	424	857	1547	1390
24	2855	2727	2164	2190	249	2849	1483	1244	141	745	1153	1679	1650
25	2668	2585	2406	1247	287	2122	1818	1318	297	547	2100	1518	1207
26	2404	2358	2353	999	983	2417	1871	764	752	1374	971	1842	624
27	2859	2657	2631	862	912	1618	947	1559	1175	1979	1090	531	917
28	2888	3010	2698	901	857	1788	1404	1918	1082	666	0	0	0
29	2286	2801	2788	2051	1894	1892	2080	2051	1305	0	780	518	310
30	2720	2568	2118	0	1898	1934	1912	501	134	0	582	291	179
31	2694	2785	2220	0	1490	1728	1834	1344	1420	1448	1634	1284	105
32	3153	2912	1292	238	1823	1222	1048	1886	969	553	1223	889	738
33	3024	1681	983	383	1028	1397	2129	1503	1122	941	1480	1747	61
34	2692	2081	2131	207	0	1743	2073	1932	1768	2097	2131	2608	648
35	1759	1849	166	0	0	380	546	1091	1511	1868	3306	1052	659
36	1186	2366	0	0	448	2187	1495	1817	2894	2530	1453	725	653
37	1328	1243	193	0	352	801	1121	1082	1291	61	1598	851	0
38	787	2135	389	223	0	927	412	810	712	692	738	0	0
39	1366	553	343	0	426	252	514	230	534	0	648	71	0
40	1995	896	0	508	419	0	0	558	443	0	645	0	0
41	1279	1184	437	646	527	0	725	735	0	0	0	0	0
42	1305	865	659	813	618	0	732	448	329	0	0	0	0
43	1279	1060	923	328	426	555	504	458	0	0	0	0	0
44	1344	0	796	501	0	458	0	0	0	0	0	0	0
45	1147	955	1144	0	0	0	0	0	0	0	0	0	0
46	687	704	579	810	417	0	0	0	0	0	0	0	0
47	672	296	537	534	0	0	0	0	0	0	0	0	0
48	522	0	579	566	558	0	0	0	0	0	0	0	0

49	570	542	1274	1001	872	0	0	0	0	0	0	0	0
50	502	904	1974	915	728	585	0	0	0	0	0	0	0
51	1075	1958	981	855	938	0	0	0	0	0	0	0	0
52	1449	1756	979	428	452	0	0	0	0	0	0	0	0
53	1300	1052	684	0	0	0	0	0	0	0	0	0	0
54	854	875	0	0	0	0	0	0	0	0	0	0	0
55	377	0	0	0	0	0	0	0	0	0	0	0	0

+	40	41	42	43	44	45	46	47	48	49	50	51	52
4	777	0	0	0	0	0	0	0	0	0	0	0	0
5	798	444	0	0	0	0	0	0	0	0	0	0	0
6	550	757	0	0	0	0	0	0	0	0	0	0	0
7	362	0	0	0	0	0	0	0	0	0	0	0	0
8	58	0	0	0	0	0	0	0	0	0	0	0	0
15	889	0	311	437	0	743	982	554	271	0	0	0	0
16	595	127	244	710	308	0	0	499	0	0	0	0	0
17	523	252	471	421	335	832	0	0	121	0	0	0	0
18	914	239	729	799	274	438	0	0	0	182	0	0	0
19	868	490	913	888	283	508	332	211	185	0	0	0	0
20	574	898	1382	1014	835	289	0	0	0	0	0	0	0
21	483	869	298	889	0	0	0	0	0	0	0	0	0
22	815	972	1398	592	58	0	0	0	0	0	0	0	0
23	773	1438	1008	500	0	831	0	0	0	0	0	0	0
24	711	1348	1310	737	844	0	0	0	0	0	0	0	0
25	1383	584	824	55	0	0	0	0	0	0	0	0	0
26	885	890	0	0	0	0	0	0	0	0	0	0	0
27	540	0	0	0	0	0	0	0	0	0	0	0	0
28	233	0	0	0	0	0	0	0	0	0	0	0	0
29	831	0	0	0	0	0	0	0	0	0	0	0	0
30	97	92	0	0	0	0	0	0	0	0	0	0	0
31	154	83	10	0	0	0	0	0	0	0	0	0	0
32	993	1055	0	0	0	0	0	0	0	0	0	0	0
33	361	394	0	0	0	0	0	0	0	0	0	0	0
35	549	0	0	0	0	0	0	0	0	0	0	0	0
38	482	0	0	0	0	0	0	0	0	0	0	0	0

TABLE AAUG(I,J) 1990 AUG. AGRI AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12	13
32	0	0	0	0	0	0	0	0	0	0	0	0	759
33	0	0	0	0	0	0	0	0	0	0	330	748	1482
34	0	0	0	0	0	0	0	0	0	532	949	875	1087
35	0	0	0	0	0	0	0	0	470	1078	949	968	1451
36	0	0	0	0	0	0	0	0	483	579	878	742	1819
37	0	0	0	0	0	0	0	721	458	514	1155	1530	506
38	0	0	0	0	0	0	23	433	389	289	622	1578	1119
39	0	0	0	0	0	17	0	14	103	192	326	1088	1849
40	0	0	0	0	302	53	78	183	197	801	928	1197	1238
41	0	0	0	0	279	255	958	1937	1847	2025	1938	923	805
42	0	0	128	570	2055	980	2388	2129	2702	2798	2540	3108	1798
43	0	0	0	353	2035	1491	1939	2013	2197	2197	1938	2533	1914
44	0	0	0	289	2144	1518	2044	2725	2897	2808	2449	1530	1784
45	0	0	0	581	1991	2153	2582	5189	3383	2532	2087	2458	1005
46	0	0	0	398	1785	2488	2281	2008	3575	2042	2675	2228	2293
47	0	0	224	1018	1282	2370	2729	2320	2805	1980	2284	2374	1384
48	0	0	0	485	1885	2008	2191	2340	2398	2270	2314	1708	1714
49	0	0	0	1021	1724	2028	1981	2894	2434	2327	1892	1818	1058
50	0	0	0	478	2471	704	2848	2878	3185	3422	2711	2860	443
51	0	0	0	578	1160	939	844	3113	2595	3040	2205	2389	2787
52	0	0	0	0	2282	874	2907	2681	2885	2565	2048	2125	2283
53	0	0	0	0	244	2137	2817	2852	2889	3108	2732	793	1778
54	0	0	0	0	0	1510	2743	1213	2537	3138	2950	580	522
55	0	0	0	0	0	0	284	2574	1942	2520	285	595	0
56	0	0	0	0	0	0	0	0	2237	1738	2850	2724	2517
57	0	0	0	0	0	0	0	0	0	0	2891	2550	2820
58	0	0	0	0	0	0	0	0	0	0	0	0	1519

+	14	15	16	17	18	19	20	21	22	23	24	25	26
8	0	0	0	0	0	0	0	0	0	0	0	0	1193
9	0	0	0	0	0	0	0	0	0	0	0	142	577
10	0	0	0	0	0	0	0	0	0	0	108	378	475
11	0	0	0	0	0	0	0	0	0	0	272	988	1319
12	0	0	0	0	0	0	0	0	0	382	787	873	1288
13	0	0	0	0	0	0	0	0	0	431	923	931	1883
14	0	0	0	0	0	0	0	0	740	421	1351	1345	2280
15	0	0	0	0	0	0	0	331	839	781	1340	1942	1818
16	0	0	0	0	0	0	465	838	1436	1123	1850	1891	2033
17	0	0	0	0	0	0	398	1320	1074	1499	1722	1780	1785
18	0	0	0	0	0	0	841	1200	1751	1435	2599	1823	2220
19	0	0	0	0	0	820	824	1474	1850	1848	2182	1807	1888
20	0	0	0	0	251	748	541	748	1337	2580	2172	1707	1842
21	0	0	0	0	451	453	819	1339	1435	2157	1891	2220	1238
22	0	219	341	825	748	1045	843	1818	2028	2084	1944	2834	861
23	0	0	403	384	813	808	700	885	2088	1823	1780	2404	1325
24	0	0	845	847	1875	800	329	1392	1889	1798	2243	2020	1913
25	0	0	0	440	2057	1127	522	2021	1493	1877	1721	2320	2180
26	0	0	0	0	748	1298	554	1942	1894	1955	1936	2358	1819
27	0	0	0	87	755	1709	1043	1321	1407	1870	1785	1843	2347
28	0	0	0	985	851	828	898	1859	1700	1836	1829	2388	2431
29	0	0	463	1050	373	774	518	1992	1808	2088	1884	3020	2131
30	0	584	796	228	525	1040	1029	1230	1583	1383	1818	2862	3083
31	458	779	737	0	581	1458	754	1260	1088	1934	1520	2503	3059
32	2395	655	463	0	740	1737	785	1349	1769	1721	1916	2598	3238
33	1294	438	0	0	420	1493	485	1732	1865	1143	1745	3110	3328
34	774	851	986	248	713	785	853	1515	1995	2046	1913	3201	3221
35	1425	2053	846	731	582	889	1498	1819	1505	2057	1538	1455	744
36	1828	2452	395	1199	1071	872	1290	1532	1897	2045	1934	1851	403
37	2519	1313	279	832	1085	975	1348	1065	1970	2301	2082	2190	1955
38	1198	732	361	1984	2504	1201	1315	519	1284	2038	1917	2854	2478
39	1771	1587	854	344	950	507	1123	748	1049	1930	1274	1128	1650
40	1752	1592	767	446	587	289	262	1002	1188	982	1424	1358	1322

41	531	0	229	850	544	281	262	726	1512	939	2140	1396	1036
42	1686	388	132	644	1019	0	979	1403	1439	851	1159	1502	1022
43	1469	1219	1880	1663	97	269	1300	982	1318	1048	1082	1348	1026
44	1871	2291	1707	1469	0	137	925	909	1563	1452	987	1353	1305
45	1823	1445	1400	1346	511	0	494	923	1046	923	540	1322	1230
46	2830	1924	1181	1248	401	0	584	950	1293	1219	707	694	851
47	2539	2256	2498	1862	1253	46	689	831	698	559	706	419	630
48	3209	2989	2545	3012	2581	530	0	0	514	710	1081	534	0
49	3033	508	2511	2714	3109	1098	240	0	852	483	1233	881	539
50	2965	1906	3185	2808	2949	718	1973	0	0	320	708	402	752
51	2946	3087	2767	3035	2486	1428	2423	2632	136	0	440	624	707
52	2722	2484	2817	2897	2809	2885	2203	2971	2641	156	275	0	792
53	1874	2583	3065	2729	2823	2285	2119	2918	2939	1023	0	187	944
54	1527	2564	3078	2549	2912	894	1070	2882	1883	1795	0	419	475
55	1428	2159	3217	2227	3178	3115	2089	488	1863	863	0	0	748
56	63	1926	2878	2573	2485	2989	2844	2418	242	0	0	529	817
57	2819	1454	2752	2435	2518	2215	1387	1120	103	0	0	813	222
58	2133	2515	2431	2574	2716	2837	2196	1989	132	0	0	791	727
59	2249	1783	1469	2266	3150	2143	2428	1094	0	0	782	707	388
60	0	0	0	0	2051	937	2092	852	0	0	0	0	163
61	0	0	0	0	0	0	1267	784	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0	312	0
65	0	0	0	0	0	0	0	0	0	35	0	0	0
66	0	0	0	0	0	0	0	0	0	0	883	0	0

*	27	28	29	30	31	32	33	34	35	36	37	38	39
3	0	0	398	517	348	618	701	377	808	1038	1190	1118	717
4	0	0	1339	1264	515	1402	1400	1030	1829	1419	1895	1479	477
5	0	487	1505	1231	1584	894	727	1181	1474	823	151	242	0
6	0	2082	408	1074	1513	1248	948	1198	1495	98	0	238	593
7	1303	426	380	263	218	997	1178	1335	458	0	0	0	813
8	1498	428	81	238	770	1728	1371	1127	0	0	0	273	1220
9	1054	710	1724	2171	2187	1701	1408	317	0	0	522	508	0
10	1572	2170	1999	1397	1973	482	0	0	0	401	773	518	297
11	2278	1859	1819	2004	1123	0	0	0	0	881	0	618	0
12	2233	1988	1637	2050	1331	0	0	479	383	781	0	0	0
13	2223	1600	1375	1899	508	0	307	0	852	380	0	0	0
14	1858	1559	1529	1480	188	0	0	503	1158	548	0	0	0
15	1623	992	620	253	0	0	400	1179	0	578	0	687	453
16	1887	2271	1437	274	152	0	788	1830	1041	0	392	504	1179
17	1399	1535	135	207	254	317	1380	1847	345	288	381	627	528
18	1683	693	259	0	0	1600	2604	1811	255	647	270	667	1828
19	2380	1235	249	0	483	2302	2292	1942	688	282	428	988	1775
20	1772	1918	1538	568	1716	2116	1872	1532	615	163	258	550	505
21	1328	2235	1270	1204	904	1318	748	838	337	484	0	388	1870
22	1998	2117	2217	2187	873	1681	1080	383	0	450	579	2094	781
23	1983	2230	2128	1648	266	1384	1233	1012	131	398	541	1050	1477
24	2235	2212	1988	1471	178	1945	1092	888	135	804	897	1248	1727
25	2187	2201	2067	1013	210	1598	1239	1024	278	428	1744	1800	1738
26	2044	2002	1998	761	717	1802	1170	684	872	1025	798	1378	1211
27	2346	2136	2120	631	828	1215	711	1140	908	1438	872	497	1358
28	2420	2525	2555	817	684	2881	2183	3254	588	352	0	0	0
29	2773	3048	3001	2298	2497	2557	2840	3487	877	0	417	928	558
30	3159	3115	2718	0	2528	2582	2540	708	851	0	678	558	723
31	2877	3184	2094	0	1738	2203	2137	2042	750	784	863	612	431
32	3102	3219	1288	172	2481	2188	1065-	3313	627	477	749	470	390
33	3207	2811	1991	199	1002	1511	2351	2893	1208	909	872	923	211
34	3258	2767	2779	609	0	2228	2619	3482	976	1228	1126	1377	342
35	2874	3012	149	0	0	540	742	880	1381	1731	1748	558	348
36	1640	1838	0	0	344	2411	1449	2188	1882	2400	815	482	345
37	957	1274	132	0	224	318	657	989	1134	18	905	498	0
38	472	1537	257	413	0	1549	347	859	452	759	478	0	0
39	1221	548	433	0	459	452	272	411	552	0	448	291	0
40	1294	638	0	274	234	0	0	311	247	0	398	0	0
41	886	748	319	443	290	0	529	689	0	0	0	0	0
42	954	697	482	643	453	0	408	250	184	0	0	0	0
43	898	795	674	240	230	309	281	254	0	0	0	0	0
44	1019	0	582	388	0	258	0	0	0	0	0	0	0
45	777	898	808	0	0	0	0	0	0	0	0	0	0
46	570	557	480	570	224	0	0	0	0	0	0	0	0
47	542	386	479	410	0	0	0	0	0	0	0	0	0
48	401	0	481	305	454	0	0	0	0	0	0	0	0
49	421	485	997	674	554	0	0	0	0	0	0	0	0
50	498	675	1327	594	552	332	0	0	0	0	0	0	0
51	773	1321	651	617	720	0	0	0	0	0	0	0	0
52	1255	1275	611	318	581	0	0	0	0	0	0	0	0
53	1046	783	515	0	0	0	0	0	0	0	0	0	0
54	553	600	0	0	0	0	0	0	0	0	0	0	0
55	294	0	0	0	0	0	0	0	0	0	0	0	0

*	40	41	42	43	44	45	46	47	48	49	50	51	52
4	482	0	0	0	0	0	0	0	0	0	0	0	0
5	848	610	0	0	0	0	0	0	0	0	0	0	0
6	1133	1036	0	0	0	0	0	0	0	0	0	0	0
7	621	0	0	0	0	0	0	0	0	0	0	0	0
8	466	0	0	0	0	0	0	0	0	0	0	0	0
15	505	0	726	1018	0	869	1043	879	682	0	0	0	0
16	436	142	569	1413	713	0	0	728	0	0	0	0	0
17	783	259	887	983	782	991	0	0	282	0	0	0	0
18	1472	301	1389	1525	640	808	0	0	0	290	0	0	0
19	1049	710	1649	1852	680	901	776	493	432	0	0	0	0
20	1166	1783	2207	1742	978	309	0	0	0	0	0	0	0
21	892	1273	690	415	0	0	0	0	0	0	0	0	0
22	1464	1630	1281	848	481	0	0	0	0	0	0	0	0
23	988	1411	1030	558	0	477	0	0	0	0	0	0	0
24	1071	1763	1841	1173	755	0	0	0	0	0	0	0	0
25	1819	807	1025	519	0	0	0	0	0	0	0	0	0
26	988	884	0	0	0	0	0	0	0	0	0	0	0
27	911	0	0	0	0	0	0	0	0	0	0	0	0
28	417	0	0	0	0	0	0	0	0	0	0	0	0

29	1489	0	0	0	0	0	0	0	0	0	0	0	0
30	399	376	0	0	0	0	0	0	0	0	0	0	0
31	633	382	39	0	0	0	0	0	0	0	0	0	0
32	525	615	0	0	0	0	0	0	0	0	0	0	0
33	647	705	0	0	0	0	0	0	0	0	0	0	0
35	343	0	0	0	0	0	0	0	0	0	0	0	0
36	255	0	0	0	0	0	0	0	0	0	0	0	0

TABLE ASEP(I,J) 1990 SEPT AGRI AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12	13
32	0	0	0	0	0	0	0	0	0	0	0	0	164
33	0	0	0	0	0	0	0	0	0	0	0	135	203
34	0	0	0	0	0	0	0	0	0	109	205	108	154
35	0	0	0	0	0	0	0	0	89	242	127	136	230
36	0	0	0	0	0	0	0	0	78	139	138	81	228
37	0	0	0	0	0	0	0	108	87	67	97	143	57
38	0	0	0	0	0	0	11	48	80	0	65	183	127
39	0	0	0	0	0	2	0	7	18	98	87	225	270
40	0	0	0	0	32	5	11	25	21	62	105	195	122
41	0	0	0	0	35	30	175	277	183	225	208	102	60
42	0	0	0	38	222	170	317	409	318	309	282	310	174
43	0	0	0	16	178	221	485	378	274	292	200	234	188
44	0	0	0	28	227	151	361	468	283	254	318	188	176
45	0	0	0	40	129	157	427	1811	877	280	224	298	103
46	0	0	0	11	107	155	178	300	1064	158	275	232	215
47	0	0	18	80	101	222	380	131	289	133	237	249	132
48	0	0	0	35	109	135	125	133	151	148	280	174	188
49	0	0	0	83	111	127	123	257	128	150	147	188	108
50	0	0	0	67	175	0	150	179	137	217	150	498	48
51	0	0	0	59	18	48	0	258	130	321	252	310	380
52	0	0	0	0	170	55	187	173	132	113	115	251	210
53	0	0	0	0	18	190	135	212	174	146	129	84	135
54	0	0	0	0	0	180	212	65	0	158	318	88	60
55	0	0	0	0	0	0	37	274	80	40	0	58	0
56	0	0	0	0	0	0	0	0	231	152	93	160	256
57	0	0	0	0	0	0	0	0	0	0	287	248	183
58	0	0	0	0	0	0	0	0	0	0	0	0	188

+	14	15	16	17	18	19	20	21	22	23	24	25	26
8	0	0	0	0	0	0	0	0	0	0	0	0	161
9	0	0	0	0	0	0	0	0	0	0	0	41	38
10	0	0	0	0	0	0	0	0	0	0	38	101	18
11	0	0	0	0	0	0	0	0	0	0	18	87	28
12	0	0	0	0	0	0	0	0	0	77	71	104	176
13	0	0	0	0	0	0	0	0	0	88	215	224	220
14	0	0	0	0	0	0	0	0	177	98	88	130	304
15	0	0	0	0	0	0	0	75	67	144	174	242	0
16	0	0	0	0	0	0	205	20	89	44	157	106	260
17	0	0	0	0	0	0	0	38	134	71	133	163	282
18	0	0	0	0	0	0	37	244	435	342	597	188	288
19	0	0	0	0	0	67	0	334	421	258	482	238	337
20	0	0	0	0	0	41	98	142	351	528	470	228	185
21	0	0	0	0	47	82	134	267	311	449	399	454	158
22	0	70	70	25	84	271	33	574	420	463	415	800	68
23	0	0	88	35	85	130	169	230	422	418	411	386	233
24	0	0	32	35	341	151	64	228	315	381	509	337	288
25	0	0	0	51	461	279	108	413	323	428	387	484	322
26	0	0	0	0	130	225	64	395	322	390	375	478	310
27	0	0	0	0	128	272	187	295	348	365	330	237	365
28	0	0	0	253	112	125	101	380	345	321	251	383	335
29	0	0	140	218	0	125	0	407	299	430	388	833	556
30	0	118	115	0	68	214	188	269	331	236	370	691	740
31	58	150	125	0	102	285	133	233	198	402	292	555	780
32	390	158	80	0	146	371	162	278	370	341	380	533	778
33	119	0	0	0	130	233	107	387	309	227	366	742	822
34	87	89	187	0	135	138	138	314	381	440	407	708	778
35	282	448	212	143	115	79	225	342	348	445	332	373	208
36	158	292	0	308	269	179	315	371	405	413	402	228	97
37	255	156	30	89	119	208	338	231	404	528	449	430	450
38	132	68	6	181	272	214	328	28	101	418	224	440	375
39	206	167	106	27	92	109	58	108	130	524	301	288	381
40	241	286	42	32	30	23	16	89	101	91	52	61	51
41	49	0	0	45	76	23	24	95	185	57	180	103	68
42	192	38	10	29	51	0	52	101	114	68	85	114	70
43	219	120	388	627	0	0	59	88	155	99	80	101	71
44	162	217	236	223	0	0	55	54	183	127	87	90	85
45	179	146	143	159	40	0	0	55	78	56	42	80	80
46	238	190	120	105	21	0	31	61	101	103	90	54	28
47	251	211	266	188	108	0	89	58	42	42	54	10	59
48	388	324	278	328	308	68	0	0	79	41	66	24	0
49	357	0	274	298	371	121	29	0	55	28	104	19	44
50	324	208	349	307	354	78	237	0	0	27	50	34	51
51	318	335	304	331	269	158	291	279	14	0	0	34	39
52	297	271	308	318	285	313	285	313	278	18	0	0	54
53	153	282	335	298	304	249	247	307	310	108	0	26	88
54	123	311	336	289	318	98	113	520	200	190	0	30	21
55	114	156	354	243	347	340	190	60	198	87	0	0	63
56	0	196	314	281	271	327	279	255	28	0	0	61	57
57	322	115	314	292	275	242	147	119	14	0	0	68	0
58	209	226	257	307	304	310	231	207	13	0	0	99	52
59	119	210	187	248	344	234	258	115	0	0	18	29	0
60	0	0	0	0	148	102	221	91	0	0	0	0	0
61	0	0	0	0	0	0	89	63	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0	11	0
65	0	0	0	0	0	0	0	0	0	2	0	0	0
66	0	0	0	0	0	0	0	0	0	0	498	0	0

+	27	28	29	30	31	32	33	34	35	36	37	38	39
3	0	0	0	0	0	0	0	0	88	78	50	0	0
4	0	0	37	98	0	107	70	47	128	45	111	149	56

5	0	74	137	123	210	122	101	189	188	204	49	79	0
6	0	408	0	138	0	0	46	49	89	0	0	77	112
7	229	0	0	0	0	0	0	95	0	0	0	0	146
8	257	147	0	0	66	89	0	50	0	0	0	0	40
9	167	134	238	293	272	203	116	47	0	0	0	0	0
10	196	243	276	218	230	38	0	0	0	52	230	178	0
11	232	46	221	248	0	0	0	0	0	78	0	72	0
12	299	314	101	289	205	0	0	143	0	268	0	0	0
13	323	228	156	232	49	0	85	0	154	128	0	0	0
14	378	105	234	203	30	0	0	52	403	95	0	0	0
15	273	120	92	30	0	0	67	368	0	143	0	81	27
16	315	359	180	33	49	0	29	209	127	0	105	78	287
17	216	309	37	57	82	42	110	271	100	5	91	71	85
18	283	66	76	0	0	231	171	281	83	164	8	198	488
19	329	153	81	0	110	327	216	186	69	64	58	177	409
20	276	296	251	79	277	288	119	123	79	5	8	188	136
21	167	200	219	187	132	170	82	106	11	16	0	0	555
22	328	395	428	445	84	250	112	86	0	104	60	703	231
23	379	358	342	309	41	138	127	118	24	80	96	119	278
24	384	356	383	141	17	250	143	107	24	97	131	187	342
25	359	394	420	163	27	227	135	151	59	78	300	323	481
26	360	354	348	82	78	248	139	127	127	146	142	242	340
27	385	337	363	84	129	186	97	146	132	181	137	100	384
28	445	459	556	91	79	797	684	1048	12	0	0	0	0
29	739	740	718	445	702	722	711	1100	257	0	0	302	181
30	794	816	583	0	710	724	712	218	175	0	176	185	229
31	670	795	442	0	444	590	588	529	0	0	0	53	137
32	668	778	282	0	701	713	232	1074	42	67	37	0	0
33	755	700	535	0	219	384	679	877	223	150	33	0	87
34	802	912	812	148	0	803	803	1127	15	43	0	0	0
35	899	943	39	0	0	187	209	140	289	380	0	0	0
36	544	332	0	0	50	634	331	567	171	497	17	43	0
37	127	284	11	0	18	0	30	200	209	0	29	18	0
38	34	216	31	111	0	488	68	175	85	202	39	0	0
39	305	113	131	0	112	147	0	134	194	0	0	92	0
40	52	38	0	0	0	0	0	0	0	0	27	0	0
41	49	35	20	21	0	0	25	41	0	0	0	0	0
42	80	55	30	48	28	0	0	0	0	0	0	0	0
43	49	53	42	15	0	0	0	0	0	0	0	0	0
44	70	0	38	23	0	0	0	0	0	0	0	0	0
45	38	44	20	0	0	0	0	0	0	0	0	0	0
46	48	42	40	32	0	0	0	0	0	0	0	0	0
47	43	54	46	29	0	0	0	0	0	0	0	0	0
48	28	0	40	0	37	0	0	0	0	0	0	0	0
49	27	41	80	32	23	0	0	0	0	0	0	0	0
50	30	25	70	24	23	0	0	0	0	0	0	0	0
51	46	59	29	32	50	0	0	0	0	0	0	0	0
52	114	85	28	20	43	0	0	0	0	0	0	0	0
53	82	49	33	0	0	0	0	0	0	0	0	0	0
54	48	46	0	0	0	0	0	0	0	0	0	0	0
55	31	0	0	0	0	0	0	0	0	0	0	0	0

+	40	41	42	43	44	45	46	47	48	49	50	51	52
5	111	121	0	0	0	0	0	0	0	0	0	0	0
6	283	170	0	0	0	0	0	0	0	0	0	0	0
7	140	0	0	0	0	0	0	0	0	0	0	0	0
8	151	0	0	0	0	0	0	0	0	0	0	0	0
15	31	0	259	364	0	109	328	277	146	0	0	0	0
16	28	30	203	479	255	0	0	197	0	0	0	0	0
17	191	49	300	351	279	240	0	0	101	0	0	0	0
18	418	74	358	512	229	281	0	0	0	108	0	0	0
19	285	197	527	548	236	286	277	176	154	0	0	0	0
20	255	597	857	542	284	89	0	0	0	0	0	0	0
21	288	418	246	0	0	0	0	0	0	0	0	0	0
22	456	500	202	233	150	0	0	0	0	0	0	0	0
23	248	253	197	121	0	28	0	0	0	0	0	0	0
24	308	452	501	348	173	0	0	0	0	0	0	0	0
25	473	222	251	169	0	0	0	0	0	0	0	0	0
26	279	222	0	0	0	0	0	0	0	0	0	0	0
27	280	0	0	0	0	0	0	0	0	0	0	0	0
28	136	0	0	0	0	0	0	0	0	0	0	0	0
29	485	0	0	0	0	0	0	0	0	0	0	0	0
30	126	119	0	0	0	0	0	0	0	0	0	0	0
31	201	121	12	0	0	0	0	0	0	0	0	0	0
32	0	21	0	0	0	0	0	0	0	0	0	0	0
33	211	230	0	0	0	0	0	0	0	0	0	0	0

TABLE TAPR(I,J) 1982 APR DEEP AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.18	0.30
38	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.08	1.03	0.05	0.05	0.43
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.07	0.18	0.48	1.02	2.74
40	0.0	0.0	0.0	0.0	0.04	0.04	0.10	0.04	0.01	0.09	0.17	1.81
41	0.0	0.0	0.0	0.0	0.12	0.11	1.40	1.89	1.41	0.97	0.91	0.10
42	0.0	0.0	0.08	0.19	0.74	1.65	2.96	5.55	1.31	0.81	0.59	0.68
43	0.0	0.0	0.0	0.07	1.48	1.79	7.28	2.01	1.56	1.97	0.37	0.80
44	0.0	0.0	0.0	0.0	0.90	0.42	4.27	1.62	0.58	0.59	0.86	0.34
45	0.0	0.0	0.0	0.13	0.42	1.37	2.54	2.87	2.16	0.49	0.40	0.76
46	0.0	0.0	0.0	0.04	0.46	0.88	1.22	1.52	4.39	0.94	0.52	0.42
47	0.0	0.0	0.03	0.0	0.24	0.50	1.55	0.0	0.21	0.21	0.0	0.61
48	0.0	0.0	0.0	0.09	0.57	0.0	0.56	0.60	0.74	0.0	0.96	0.80
49	0.0	0.0	0.0	0.35	0.91	0.64	0.0	0.0	0.62	0.72	0.78	0.51
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.38
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.88
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.88
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.02
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.72
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.72

+	13	14	15	16	17	18	19	20	21	22	23	24

36	0.0	0.26	0.09	0.28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	0.0	0.53	0.09	0.0	0.0	0.18	0.0	0.0	0.0	0.0	0.0	0.0
38	0.39	0.16	0.11	0.0	0.27	0.59	0.0	0.0	0.0	0.0	0.0	0.0
39	1.63	0.20	0.57	0.03	0.05	0.23	0.0	0.0	0.0	0.0	0.0	0.0
40	0.23	2.19	3.22	0.15	0.14	0.14	0.0	0.0	0.0	0.0	0.0	0.0
41	0.09	0.09	0.0	0.03	0.0	0.03	0.0	0.0	0.0	0.0	0.0	0.0
42	0.35	0.79	0.08	0.03	0.12	0.15	0.0	0.0	0.0	0.0	0.0	0.0
43	0.39	0.23	0.25	2.77	1.89	0.03	0.0	0.0	0.0	0.0	0.0	0.0
44	0.38	0.38	0.47	1.05	1.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	0.18	0.38	0.28	0.25	0.58	0.12	0.0	0.0	0.0	0.0	0.0	0.0
46	0.57	0.83	0.35	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.25	0.61	0.55	0.44	0.37	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.82	2.70	3.08	2.84	3.12	1.68	0.48	0.0	0.0	0.0	0.0	0.0
49	0.21	2.76	2.40	2.58	2.82	2.10	1.02	0.18	0.0	0.0	0.0	0.0
50	0.78	3.06	1.98	3.30	2.94	1.98	0.60	1.32	0.0	0.0	0.0	0.0
51	4.98	3.12	3.24	2.94	3.12	2.52	1.38	1.82	3.00	0.18	0.0	0.0
52	0.90	2.82	2.58	2.94	3.00	2.70	2.94	1.44	3.48	3.06	0.18	0.0
53	0.0	2.94	2.70	3.18	2.82	3.06	2.34	3.00	3.42	3.42	1.14	0.0
54	0.66	0.0	3.24	3.18	2.76	3.00	0.84	1.20	5.40	2.18	1.98	0.0
55	0.0	1.62	3.72	3.36	2.28	3.30	3.24	2.10	0.48	2.18	1.08	0.0
56	0.0	0.0	0.0	3.00	2.64	2.58	3.06	3.06	2.82	0.18	0.0	0.0
57	0.0	0.0	0.0	3.18	1.62	2.58	2.28	1.62	1.26	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	2.52	2.94	2.94	2.58	2.34	0.18	0.0	0.0
59	0.0	0.0	0.0	0.0	3.48	3.24	2.18	2.82	1.28	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	2.40	0.90	2.40	1.02	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.02	0.0	0.0	0.0

+	25	26	27	28	29	30	31	32	33	34	35	36
22	0.08	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0
23	0.25	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.08	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.23	0.0	0.0	0.06	0.18	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.28	0.0	0.02	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	0.18	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.0	0.0	0.13	0.0	0.0	0.0	0.0	0.13	0.0	0.0	0.0	0.0

TABLE THAY(I,J) 1982 MAY DEEP AQUIFER DEMAND IN ACRE-FT

	1	2	3	4	5	6	7	8	9	10	11	12
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.30	6.28
38	0.0	0.0	0.0	0.0	0.0	0.0	0.08	1.08	3.28	0.88	0.79	5.48
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.17	0.88	1.20	3.88	9.22
40	0.0	0.0	0.0	0.0	0.76	0.30	0.45	0.19	0.22	1.51	2.27	7.39
41	0.0	0.0	0.0	0.0	0.84	0.73	5.53	7.92	11.39	8.45	8.76	1.72
42	0.0	0.0	0.88	2.20	6.93	5.99	15.72	19.88	10.43	9.43	8.20	11.88
43	0.0	0.0	0.0	0.77	9.12	7.46	21.58	9.22	9.80	10.69	5.46	10.58
44	0.0	0.0	0.0	0.0	5.80	1.05	14.26	9.70	10.15	10.28	7.53	3.80
45	0.0	0.0	0.0	1.57	4.88	8.51	10.80	9.80	10.21	8.84	6.52	9.24
46	0.0	0.0	0.0	0.44	5.40	10.26	5.13	8.22	14.84	7.66	9.18	7.35
47	0.0	0.0	0.33	3.11	2.76	5.50	9.08	4.61	5.50	4.79	5.15	7.98
48	0.0	0.0	0.0	1.10	6.61	4.44	6.48	7.02	8.64	5.30	7.01	7.08
49	0.0	0.0	0.0	4.12	4.40	6.90	4.08	5.68	7.29	4.37	9.05	5.94
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.28
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.54
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.38
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.24
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.58
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.76

+	13	14	15	16	17	18	19	20	21	22	23	24
36	0.0	4.62	1.58	3.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	0.0	9.24	1.58	0.52	0.61	2.11	0.0	0.0	0.0	0.0	0.0	0.0
38	3.17	2.77	1.85	0.87	3.17	6.86	0.0	0.0	0.0	0.0	7.57	11.58
39	7.36	3.43	5.96	1.09	0.86	2.64	0.0	0.0	0.0	0.0	1.78	1.85
40	4.09	10.48	12.00	2.71	1.65	1.62	0.0	0.0	0.0	0.0	0.0	0.0
41	1.52	1.58	0.0	0.55	0.87	0.40	0.0	0.0	0.0	0.0	0.0	0.0
42	6.07	6.61	1.32	0.59	1.39	2.64	0.0	0.0	0.0	0.0	0.0	0.0
43	6.80	4.09	4.36	11.29	5.08	0.33	0.0	0.0	0.0	0.0	0.0	0.0
44	5.83	6.34	8.16	7.22	5.34	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	3.23	6.73	4.88	4.42	4.73	1.39	0.0	0.0	0.0	0.0	0.0	0.0
46	9.13	14.52	8.14	4.29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	4.29	10.63	9.70	7.66	6.40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	7.61	47.58	53.94	46.14	54.60	29.56	8.40	0.0	0.0	0.0	0.0	0.0
49	3.70	44.94	42.42	45.60	48.14	36.36	18.30	2.78	0.0	0.0	0.0	0.0
50	8.88	53.82	34.62	58.02	51.08	34.26	10.02	22.80	0.0	0.0	0.0	0.0
51	40.98	54.12	56.48	60.28	55.08	44.58	24.36	27.96	52.62	2.82	0.0	0.0
52	28.10	49.50	45.18	61.05	52.82	47.22	51.72	25.50	60.60	53.52	2.82	0.0
53	19.86	31.38	46.92	55.88	49.80	53.52	41.04	42.90	59.70	60.12	19.92	0.0
54	7.62	13.14	48.12	55.92	47.88	52.44	14.40	21.00	48.74			
55	0.0	18.60	43.74	58.38	40.20	57.72	56.34	36.36	8.40	37.74	9.38	0.0
56	0.0	0.0	0.0	52.14	46.56	44.94	53.82	53.82	48.96	3.48	0.0	0.0
57	0.0	0.0	0.0	49.80	28.32	45.60	39.68	27.98	22.38	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	29.70	49.08	51.08	45.48	40.58	3.48	0.0	0.0
59	0.0	0.0	0.0	0.0	40.88	57.18	38.28	48.96	22.38	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	41.58	15.86	41.94	17.48	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.36	17.46	0.0	0.0	0.0

+	25	26	27	28	29	30	31	32	33	34	35	36
16	0.0	0.0	0.0	9.74	8.61	0.22	0.0	0.0	5.17	8.61	4.84	0.0
17	0.0	0.0	6.03	4.64	0.0	0.0	0.0	0.19	8.40	4.09	0.0	0.0
18	7.88	12.06	7.42	3.71	0.0	0.0	0.0	7.75	8.46	4.20	0.0	0.0
19	7.42	8.35	12.98	3.01	0.0	0.0	0.43	6.03	12.06	10.66	2.32	0.0
20	8.81	8.81	8.18	4.31	6.46	2.15	3.23	3.01	6.89	2.58	0.0	0.0
21	7.88	6.03	6.46	12.52	4.31	5.17	3.88	0.0	0.0	0.0	0.0	0.0
22	9.07	4.41	10.04	8.98	9.10	8.67	5.73	8.67	5.81	0.22	0.0	0.34
23	14.97	7.00	8.67	11.97	11.43	7.43	1.75	8.83	7.51	4.82	0.34	0.98
24	10.92	10.65	11.18	11.86	8.51	10.67	0.66	11.55	5.02	3.88	0.25	2.45
25	10.95	10.53	11.41	10.73	9.70	5.48	1.47	8.67	7.30	5.48	0.98	0.49
25	11.27	9.12	9.87	9.77	9.79	4.84	5.28	10.22	6.39	2.89	2.56	4.90
27	11.84	12.38	12.37	11.60	11.46	4.46	2.15	7.30	4.41	7.38	3.92	8.83
35	2.67	1.11	1.78	1.78	0.0	0.0	0.0	0.48	0.72	4.06	5.74	6.22

36	11.13	0.45	0.20	3.84	0.0	0.0	0.96	4.99	3.83	4.78	14.82	9.56
37	8.90	5.79	5.34	4.01	0.57	0.0	1.91	1.53	4.74	3.35	4.78	0.0
38	13.36	12.91	2.45	8.01	1.11	0.21	0.0	0.48	0.0	0.0	0.96	0.72
39	1.56	2.45	0.89	0.0	0.0	0.0	0.72	0.0	0.57	0.0	0.0	0.0

+	37	38	39	40	41	42	43	44	45	46	47	48
22	2.45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	1.23	6.03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	3.92	6.86	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	8.33	4.90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	2.45	5.88	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	3.43	0.49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE TJUN(I,J) 1982 JUNE DEEP AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.58	10.67
38	0.0	0.0	0.0	0.0	0.0	0.0	0.10	1.54	4.10	1.28	1.13	8.64
39	0.0	0.0	0.0	0.0	0.0	0.14	0.0	0.20	1.15	1.44	4.75	11.70
40	0.0	0.0	0.0	0.0	1.50	0.64	0.58	0.24	0.31	2.45	3.23	9.64
41	0.0	0.0	0.0	0.0	1.16	1.35	7.78	10.49	15.78	12.46	12.24	2.45
42	0.0	0.0	1.28	3.15	9.80	7.66	21.09	25.47	14.44	13.29	11.57	15.97
43	0.0	0.0	0.0	1.10	12.54	9.81	26.94	13.05	13.35	14.37	9.28	17.52
44	0.0	0.0	0.0	0.0	10.11	2.14	18.59	14.28	14.61	14.66	11.78	9.40
45	0.0	0.0	0.0	2.24	7.38	12.13	14.66	15.68	16.01	12.34	9.39	15.40
46	0.0	0.0	0.0	0.63	7.72	14.69	11.24	11.60	20.47	10.72	13.12	10.48
47	0.0	0.0	0.47	8.50	3.94	10.38	13.02	9.53	11.00	9.52	10.74	11.37
48	0.0	0.0	0.0	1.57	9.45	9.28	9.28	10.03	12.34	11.48	12.51	8.98
49	0.0	0.0	0.0	5.88	11.87	9.82	8.52	11.85	10.42	11.96	12.92	8.48
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.20
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70.20
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.06
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.80
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.24
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.94

+	13	14	15	16	17	18	19	20	21	22	23	24
36	0.0	10.82	11.68	4.71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	0.0	13.20	3.83	1.09	1.27	3.02	0.0	0.0	0.0	0.0	0.0	0.0
38	5.53	3.88	3.54	1.81	5.57	9.81	0.0	0.0	0.0	0.0	14.40	25.01
39	9.70	4.90	8.35	2.27	0.94	3.81	0.0	0.0	0.0	0.0	10.12	8.90
40	5.85	14.93	15.44	5.40	2.36	2.31	0.0	0.0	0.0	0.0	0.0	0.0
41	2.17	2.28	0.0	0.79	1.81	0.57	0.0	0.0	0.0	0.0	0.0	0.0
42	8.57	9.17	1.89	0.85	1.98	3.77	0.0	0.0	0.0	0.0	0.0	0.0
43	9.71	5.85	6.22	15.56	7.56	0.47	0.0	0.0	0.0	0.0	0.0	0.0
44	12.21	11.01	15.52	10.14	9.34	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	4.62	9.62	8.98	6.32	8.55	5.11	0.0	0.0	0.0	0.0	0.0	0.0
46	16.06	22.27	12.60	8.13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	8.09	18.71	13.86	10.94	9.15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	10.81	67.92	77.10	65.94	78.00	42.24	12.00	0.0	0.0	0.0	0.0	0.0
49	5.28	64.38	60.60	66.16	70.20	54.78	28.22	3.98	0.0	0.0	0.0	0.0
50	12.88	78.92	49.44	82.92	72.90	48.96	14.28	32.58	0.0	0.0	0.0	0.0
51	80.42	81.90	82.92	71.82	79.68	63.66	34.74	39.98	75.18	4.02	0.0	0.0
52	57.96	70.68	64.56	72.90	75.18	67.44	73.88	38.48	88.58	78.44	4.02	0.0
53	42.72	46.66	67.02	79.56	70.74	76.44	68.62	61.98	85.32	85.92	28.50	0.0
54	10.86	27.42	69.36	79.92	68.48	74.94	20.52	30.00	70.14	53.94	49.88	0.0
55	0.0	28.56	62.46	83.46	57.42	82.44	80.52	82.14	12.00	53.94	14.04	0.0
56	0.0	0.0	0.0	74.49	68.54	64.20	76.92	78.92	89.96	4.98	0.0	0.0
57	0.0	0.0	0.0	71.52	40.44	65.16	56.70	39.96	31.98	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	42.48	70.26	72.90	64.92	57.96	4.98	0.0	0.0
59	0.0	0.0	0.0	0.0	58.14	81.66	54.72	69.96	31.98	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	59.48	22.38	59.94	24.98	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.34	24.96	0.0	0.0	0.0

+	25	26	27	28	29	30	31	32	33	34	35	36
16	0.0	0.0	0.0	22.19	16.03	0.78	0.0	0.0	12.36	23.17	9.93	0.0
17	0.0	0.0	12.59	11.57	0.58	0.32	0.0	0.99	16.71	19.73	0.71	0.19
18	16.28	24.29	14.13	7.77	0.48	0.0	0.0	15.52	28.58	17.30	0.0	0.0
19	15.54	17.84	25.88	12.38	0.0	0.0	3.01	23.80	28.90	19.49	4.32	0.0
20	18.72	17.35	17.22	19.19	13.53	5.01	12.98	15.14	13.81	10.07	0.0	0.0
21	15.63	11.88	14.81	26.28	11.48	8.54	8.19	2.38	0.0	0.0	0.0	0.0
22	15.63	8.84	18.40	17.00	17.24	14.45	10.35	15.53	10.08	0.73	0.0	0.74
23	23.46	10.90	14.45	19.98	19.05	12.39	2.82	14.09	13.24	8.44	0.74	1.52
24	18.94	17.78	18.64	19.77	14.24	19.19	2.18	19.53	8.77	6.87	0.59	3.80
25	17.80	19.25	19.02	17.92	16.30	9.13	2.28	14.85	12.57	9.13	1.52	1.27
26	20.33	15.19	18.84	16.30	16.32	8.52	8.59	17.77	11.05	5.28	3.88	8.38
27	21.55	20.63	20.82	19.33	19.23	7.44	7.11	12.17	8.85	11.41	6.09	13.88
35	7.31	2.57	3.28	3.54	0.71	0.0	0.0	0.74	1.11	8.31	8.90	11.15
36	22.12	1.10	4.00	18.48	0.0	0.0	1.48	11.80	8.94	7.42	23.90	15.58
37	16.63	11.09	9.33	6.68	1.11	0.0	2.97	2.37	7.42	5.94	7.42	0.71
38	25.83	27.24	4.37	16.22	2.43	1.07	0.0	0.74	0.40	0.09	3.38	2.99
39	9.03	14.80	8.98	0.63	0.71	0.0	1.41	0.0	0.89	0.0	1.91	0.0

+	37	38	39	40	41	42	43	44	45	46	47	48
16	0.48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	4.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	2.28	10.13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	8.09	10.65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	13.70	7.61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	4.57	9.90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	5.33	0.78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE TJUL(I,J) 1982 JULY DEEP AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.68	18.45
38	0.0	0.0	0.0	0.0	0.0	0.0	0.07	4.19	4.71	1.31	2.73	17.28
39	0.0	0.0	0.0	0.0	0.0	0.22	0.0	0.13	1.33	0.96	4.14	13.30
40	0.0	0.0	0.0	0.0	3.33	0.71	0.81	0.63	0.73	5.38	8.47	13.37
41	0.0	0.0	0.0	0.0	2.87	2.38	11.84	20.66	22.13	23.37	22.53	6.64
42	0.0	0.0	1.31	5.29	23.16	11.44	30.82	29.51	30.12	30.54	27.28	36.41
43	0.0	0.0	0.0	3.45	19.12	16.32	27.52	22.27	24.89	26.33	21.01	31.57

44	0.0	0.0	0.0	0.89	25.53	9.93	22.29	28.93	29.67	29.99	25.28	18.93
45	0.0	0.0	0.0	4.22	17.55	21.68	28.84	27.11	22.61	27.84	22.17	29.06
46	0.0	0.0	0.0	3.66	16.85	24.32	21.80	17.49	25.76	18.19	29.87	24.38
47	0.0	0.0	0.88	9.73	9.39	28.74	24.53	23.47	29.70	18.71	26.73	25.87
48	0.0	0.0	0.0	3.31	15.41	18.08	21.51	23.37	22.91	21.24	26.85	19.88
49	0.0	0.0	0.0	10.20	17.86	19.32	18.68	31.46	25.41	21.72	23.39	20.35
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	183.06
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	125.22
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	141.78
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.92
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.82
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.68

+	13	14	15	16	17	18	19	20	21	22	23	24
36	0.0	18.66	28.69	4.90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	0.0	29.01	11.21	2.56	5.45	8.48	0.0	0.0	0.0	0.0	0.0	0.0
38	10.71	10.73	8.73	2.00	13.94	28.84	0.0	0.0	0.0	0.0	23.58	31.94
39	19.86	15.98	18.47	8.88	2.24	9.38	0.0	0.0	0.0	0.0	18.95	14.58
40	12.38	21.73	19.53	7.06	3.57	3.95	0.0	0.0	0.0	0.0	0.0	0.0
41	4.59	4.33	0.0	0.82	6.72	3.16	0.0	0.0	0.0	0.0	0.0	0.0
42	19.32	18.19	3.89	1.34	5.98	10.47	0.0	0.0	0.0	0.0	0.0	0.0
43	20.52	12.69	13.03	22.21	10.02	0.49	0.0	0.0	0.0	0.0	0.0	0.0
44	21.97	21.14	27.95	18.48	16.53	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	10.43	20.09	16.30	14.24	14.19	5.59	0.0	0.0	0.0	0.0	0.0	0.0
46	28.50	37.21	23.58	13.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	15.07	32.09	25.80	25.92	19.66	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	19.84	207.42	200.79	171.72	203.10	157.20	31.28	0.0	0.0	0.0	0.0	0.0
49	11.60	195.38	63.00	169.74	182.78	183.58	58.22	14.64	0.0	0.0	0.0	0.0
50	31.50	200.15	128.78	215.84	189.84	181.62	37.20	121.14	0.0	0.0	0.0	0.0
51	182.04	201.78	210.30	187.02	204.90	168.02	90.50	148.74	181.14	9.48	0.0	0.0
52	118.14	194.02	188.00	189.84	195.72	175.62	192.42	135.68	206.10	182.28	8.46	0.0
53	90.98	98.24	174.80	207.18	184.20	182.18	152.58	145.68	202.98	204.54	68.18	0.0
54	34.88	70.14	178.44	208.14	177.98	195.48	53.48	71.34	158.38	128.40	120.24	0.0
55	0.0	66.38	118.08	217.08	149.62	214.82	209.78	168.58	28.88	127.74	34.92	0.0
56	0.0	0.0	0.0	193.92	173.22	187.22	200.70	183.12	187.16	15.24	0.0	0.0
57	0.0	0.0	0.0	184.98	150.38	189.58	147.90	85.82	77.48	5.34	0.0	0.0
58	0.0	0.0	0.0	0.0	184.88	182.48	190.02	153.30	137.22	9.90	0.0	0.0
59	0.0	0.0	0.0	0.0	158.90	212.70	142.44	167.18	76.06	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	112.28	58.28	144.08	59.46	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	69.42	43.80	0.0	0.0	0.0

+	25	26	27	28	29	30	31	32	33	34	35	36
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.75
16	0.0	0.0	0.0	23.70	17.19	0.83	0.07	0.0	12.58	23.98	10.48	0.0
17	0.0	0.0	15.64	15.13	0.85	0.80	0.05	1.11	18.03	22.94	0.91	0.93
18	17.21	29.59	17.91	8.12	1.18	0.0	0.0	17.29	37.80	20.88	0.08	2.27
19	18.61	22.32	30.80	14.09	0.06	0.0	3.99	28.94	30.69	25.60	9.28	0.61
20	21.73	20.44	21.03	22.75	17.48	6.28	19.85	24.24	28.18	18.62	4.80	1.14
21	21.64	13.85	16.94	31.04	14.00	11.92	9.22	10.45	6.48	6.54	1.88	4.83
22	29.31	9.20	26.90	26.21	27.07	24.59	13.91	22.23	14.14	1.03	0.0	1.38
23	33.75	17.06	23.60	29.70	28.34	19.91	4.17	18.57	18.03	12.21	1.11	2.67
24	26.30	28.04	28.55	29.43	23.13	24.18	2.79	27.85	13.00	10.18	0.84	5.80
25	27.48	29.28	28.58	27.59	24.69	13.80	3.22	21.18	16.88	13.17	2.67	1.79
26	29.68	23.20	25.67	25.10	25.14	11.00	10.82	24.88	15.06	8.39	8.58	11.84
27	28.57	30.98	30.98	28.58	28.11	9.28	9.63	17.18	8.82	16.08	8.93	19.21
35	14.17	6.38	19.48	20.54	1.08	0.0	0.0	3.01	3.86	9.57	15.21	19.11
36	29.08	1.98	11.79	28.42	0.0	0.0	2.18	24.25	15.83	19.03	31.10	27.67
37	26.60	20.34	12.85	12.39	1.37	0.0	3.84	2.80	9.17	10.00	12.17	0.83
38	37.38	37.31	5.46	21.91	3.10	1.90	0.0	9.44	1.81	6.77	4.04	5.98
39	13.33	21.24	13.41	3.89	1.84	0.0	2.90	0.43	1.05	0.34	6.67	0.0

+	37	38	39	40	41	42	43	44	45	46	47	48
16	0.73	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	1.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	5.48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	3.48	13.48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	8.93	15.18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	21.18	14.23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	6.92	15.39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	8.03	1.34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE TAUG(I,J) 1982 AUG. DEEP AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.89	15.65
38	0.0	0.0	0.0	0.0	0.0	0.0	0.03	4.23	3.65	0.70	2.85	15.22
39	0.0	0.0	0.0	0.0	0.0	0.17	0.0	0.07	0.97	0.48	2.80	10.04
40	0.0	0.0	0.0	0.0	3.15	0.51	0.88	0.65	0.71	5.06	8.52	11.03
41	0.0	0.0	0.0	0.0	2.89	2.09	10.10	19.73	17.00	21.01	20.01	8.70
42	0.0	0.0	0.73	5.85	21.72	10.00	25.01	22.23	28.42	29.47	28.53	33.95
43	0.0	0.0	0.0	3.14	20.77	14.71	19.93	20.67	22.73	22.82	20.01	27.29
44	0.0	0.0	0.0	1.79	22.08	15.33	20.68	28.21	27.12	27.42	25.48	14.92
45	0.0	0.0	0.0	5.07	19.88	22.03	25.11	29.39	24.73	28.45	21.50	26.20
46	0.0	0.0	0.0	3.01	17.91	26.79	23.52	18.97	25.41	20.83	28.24	23.40
47	0.0	0.0	1.05	9.58	12.89	24.74	25.77	23.87	27.38	19.90	23.90	24.85
48	0.0	0.0	0.0	4.28	16.65	20.41	22.38	24.11	24.77	23.35	24.34	17.74
49	0.0	0.0	0.0	10.74	17.46	20.62	20.20	28.42	25.10	23.83	19.03	19.07
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	176.64
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	145.62
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.22
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.54
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.12
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.34

+	13	14	15	16	17	18	19	20	21	22	23	24
36	0.0	16.08	27.00	2.73	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	0.0	27.30	11.61	2.63	5.38	8.31	0.0	0.0	0.0	0.0	0.0	0.0
38	9.69	10.83	5.60	1.25	19.60	28.13	0.0	0.0	0.0	0.0	21.84	21.07

39	18.89	16.92	15.03	6.90	3.07	7.58	0.0	0.0	0.0	0.0	20.69	12.67
40	11.44	17.75	15.86	6.14	2.83	2.90	0.0	0.0	0.0	0.0	0.0	0.0
41	4.24	3.85	0.0	0.44	5.82	3.35	0.0	0.0	0.0	0.0	0.0	0.0
42	16.98	16.79	3.70	1.08	5.57	10.07	0.0	0.0	0.0	0.0	0.0	0.0
43	19.01	11.88	12.03	19.18	10.90	0.27	0.0	0.0	0.0	0.0	0.0	0.0
44	19.09	18.86	24.15	16.82	15.08	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	9.93	18.54	14.39	13.54	13.55	4.66	0.0	0.0	0.0	0.0	0.0	0.0
46	24.44	30.80	20.76	12.73	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	13.28	28.54	23.91	25.38	18.34	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	17.75	216.24	200.28	171.30	202.68	171.30	31.14	0.0	0.0	0.0	0.0	0.0
49	10.92	203.76	33.96	169.32	182.40	208.74	68.10	16.02	0.0	0.0	0.0	0.0
50	29.88	199.88	128.52	215.52	189.42	187.76	37.08	131.94	0.0	0.0	0.0	0.0
51	185.28	197.88	208.14	186.54	204.36	195.86	90.36	162.00	175.28	9.18	0.0	0.0
52	148.32	183.80	187.58	189.42	195.24	1						
53	115.52	122.52	174.24	206.78	183.72	189.80	152.22	141.84	186.62	168.18	68.12	0.0
54	34.98	98.64	178.56	207.72	177.54	195.06	53.34	89.16	154.50	124.44	118.94	0.0
55	0.0	92.82	142.38	218.78	149.10	214.08	208.28	138.72	29.40	123.54	35.94	0.0
56	0.0	0.0	0.0	193.50	172.86	166.80	200.34	177.48	162.24	15.90	0.0	0.0
57	0.0	0.0	0.0	184.92	183.80	189.14	147.80	93.06	75.48	5.98	0.0	0.0
58	0.0	0.0	0.0	0.0	172.92	182.22	185.88	148.02	132.78	8.94	0.0	0.0
59	0.0	0.0	0.0	0.0	152.22	212.16	142.08	162.24	73.74	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	134.22	58.14	139.98	57.80	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.52	49.62	0.0	0.0	0.0

+	25	26	27	28	29	30	31	32	33	34	35	36
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.07
16	0.0	0.0	0.0	24.82	15.28	0.79	0.57	0.0	7.94	19.80	9.31	0.0
17	0.0	0.0	14.30	15.88	1.06	1.08	0.52	0.82	14.00	19.97	2.44	0.86
18	15.48	24.57	17.42	8.48	1.69	0.0	0.0	17.00	29.03	19.38	0.48	3.99
19	19.51	21.41	28.54	11.83	0.46	0.0	4.41	25.78	25.15	20.99	4.92	0.95
20	18.31	16.94	18.91	20.57	18.48	6.28	19.08	23.32	21.41	15.63	4.64	1.10
21	23.99	11.59	13.57	24.54	12.80	11.02	9.01	12.38	5.89	8.15	1.84	4.88
22	29.57	8.31	21.88	22.59	23.93	23.44	8.80	17.15	9.69	1.08	0.0	1.68
23	26.08	14.43	21.37	24.28	23.12	17.69	3.21	13.53	12.28	6.67	1.08	2.63
24	21.91	20.83	24.21	24.02	21.17	16.31	1.97	20.56	9.65	7.30	0.79	4.73
25	23.85	23.53	23.58	23.83	20.97	11.12	2.37	18.08	11.57	10.30	2.53	1.39
26	23.59	19.80	21.98	21.45	21.48	9.34	7.86	18.65	10.63	7.32	5.93	8.97
27	20.12	25.80	25.59	23.12	22.74	5.76	6.97	12.98	7.41	11.83	5.94	14.03
35	15.56	5.10	31.94	33.52	0.95	0.0	0.0	4.30	5.30	7.76	13.99	17.91
36	20.02	2.06	18.74	20.59	0.0	0.0	1.89	27.09	15.23	23.08	20.31	28.33
37	23.98	21.02	9.41	12.79	0.92	0.0	2.46	1.48	5.39	9.19	10.77	0.19
38	29.84	27.71	3.37	15.85	2.08	3.48	0.0	15.82	1.53	7.27	2.56	6.56
39	11.54	17.94	11.98	3.54	2.08	0.0	3.15	0.77	0.55	0.61	5.81	0.0

+	37	38	39	40	41	42	43	44	45	46	47	48
16	1.39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	1.26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	3.72	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	2.88	9.17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	6.94	11.38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	17.70	14.18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	5.72	12.97	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	6.48	1.29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE TSEP(I,J) 1962 SEPT DEEP AQUIFER DEMAND IN ACRE-FT PER MO

	1	2	3	4	5	6	7	8	9	10	11	12
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.92	1.47
38	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.47	0.77	0.0	0.28	1.76
39	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.03	0.17	0.24	0.72	2.02
40	0.0	0.0	0.0	0.0	0.34	0.06	0.11	0.10	0.08	0.53	0.98	1.75
41	0.0	0.0	0.0	0.0	0.36	0.25	1.75	2.79	1.68	2.33	2.12	0.74
42	0.0	0.0	0.0	0.38	2.35	1.71	3.27	4.17	3.32	3.28	2.95	3.41
43	0.0	0.0	0.0	0.13	1.79	2.15	4.87	3.79	2.82	3.00	2.07	2.53
44	0.0	0.0	0.0	0.17	2.33	1.52	3.57	4.75	2.85	2.58	3.27	1.80
45	0.0	0.0	0.0	0.36	1.28	1.89	3.65	6.81	4.00	2.73	2.34	3.13
46	0.0	0.0	0.0	0.08	1.07	1.80	1.79	2.28	5.25	1.80	2.91	2.44
47	0.0	0.0	0.07	0.56	1.01	2.32	2.74	1.34	2.84	1.34	2.49	2.82
48	0.0	0.0	0.0	0.32	1.08	1.36	1.28	1.36	1.55	1.52	2.92	1.81
49	0.0	0.0	0.0	0.66	1.10	1.29	1.26	2.73	1.31	1.52	1.49	1.97
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.50
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.48
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.88
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.48
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.50
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.78

+	13	14	15	16	17	18	19	20	21	22	23	24
36	0.0	1.57	3.22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	0.0	2.78	1.38	0.28	0.53	0.92	0.0	0.0	0.0	0.0	0.0	0.0
38	1.10	1.20	0.51	0.02	1.58	2.85	0.0	0.0	0.0	0.0	4.50	2.50
39	2.74	1.98	1.61	0.88	0.24	0.75	0.0	0.0	0.0	0.0	5.63	3.00
40	1.14	2.38	2.77	0.34	0.20	0.15	0.0	0.0	0.0	0.0	0.0	0.0
41	0.42	0.36	0.0	0.0	0.36	0.40	0.0	0.0	0.0	0.0	0.0	0.0
42	1.59	1.91	0.37	0.08	0.25	0.50	0.0	0.0	0.0	0.0	0.0	0.0
43	1.89	1.20	1.19	3.84	3.39	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	1.90	1.85	2.30	2.28	2.24	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	1.02	1.83	1.46	1.40	1.58	0.37	0.0	0.0	0.0	0.0	0.0	0.0
46	2.31	2.61	2.06	1.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	1.30	2.74	2.25	2.83	1.84	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	1.92	24.84	21.90	18.78	22.20	20.58	3.42	0.0	0.0	0.0	0.0	0.0
49	1.11	23.94	0.0	18.54	19.98	24.98	7.50	1.92	0.0	0.0	0.0	0.0
50	3.12	21.84	14.04	23.58	20.70	23.78	4.08	15.84	0.0	0.0	0.0	0.0
51	25.08	21.36	22.62	20.62	22.38	18.12	9.90	19.50	16.72	0.96	0.0	0.0
52	13.44	20.10	18.36	20.70	21.38	19.20	21.00	17.78	21.12	18.56	0.88	0.0
53	8.82	9.90	19.08	22.62	20.10	20.48	16.68	18.44	20.78	20.94	7.02	0.0
54	4.02	7.92	20.76	22.74	19.44	21.38	5.82	7.32	23.34	13.14	12.42	0.0
55	0.0	7.38	10.08	23.94	16.32	23.46	22.92	12.66	3.18	13.02	8.34	0.0

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56     0.0      0.0      0.0     21.16    18.90    18.24    21.96    16.78    17.16     1.80     0.0      0.0
57     0.0      0.0      0.0     21.05    19.68    18.48    16.14     9.84     8.04     0.98     0.0      0.0
58     0.0      0.0      0.0      0.0     20.70    20.40    20.76    15.60    13.98     0.84     0.0      0.0
59     0.0      0.0      0.0      0.0     16.66    23.22    18.54    17.16     7.80     0.0      0.0      0.0
60     0.0      0.0      0.0      0.0      0.0      9.60     6.36    14.88     5.05     0.0      0.0      0.0
61     0.0      0.0      0.0      0.0      0.0      0.0      0.0      5.64     3.42     0.0      0.0      0.0

+       25       26       27       28       29       30       31       32       33       34       35       36
 15    0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.53
 16    0.0      0.0      0.0      3.84     1.88     0.08     0.19     0.0      0.30     2.24     1.12     0.0
 17    0.0      0.0      2.22     3.21     0.30     0.30     0.17     0.12     1.10     2.98     0.71     0.02
 18    1.87     3.21     2.98     0.80     0.49     0.0      0.0      2.43     1.88     3.04     0.16     1.02
 19    2.47     3.71     3.71     1.48     0.16     0.0      0.99     3.71     2.33     2.07     0.64     0.21
 20    2.47     1.73     2.96     3.21     2.72     0.74     3.10     3.31     1.28     1.25     0.58     0.03
 21    4.94     1.48     1.73     2.22     2.22     1.73     1.31     1.61     0.82     0.77     0.08     0.16
 22    6.79     0.87     3.60     4.27     4.64     4.82     0.64     2.58     1.03     0.19     0.0      0.36
 23    4.16     2.55     4.13     3.85     3.78     3.38     0.46     1.33     1.28     1.03     0.19     0.51
 24    3.70     3.28     4.20     3.91     4.24     1.59     0.19     2.88     1.28     0.90     0.14     0.77
 25    4.48     3.54     3.92     4.28     3.91     1.81     0.31     2.31     1.28     1.54     0.61     0.28
 26    4.27     3.38     3.91     3.80     3.77     0.88     0.63     2.82     1.28     1.41     1.13     1.28
 27    2.82     4.25     4.26     3.70     3.90     0.68.    1.33     1.79     1.03     1.54     1.03     1.79
 35    4.00     2.25    10.00    10.60     0.25     0.0      0.0      1.25     1.50     1.25     2.75     3:75
 36    2.50     0.50     5.38     3.75     0.0      0.0      0.25     7.13     3.50     5.00     1.68     5.50
 37    4.75     4.88     1.25     2.88     0.07     0.0      0.20     0.0      0.25     1.88     2.00     0.0
 38    5.00     4.25     0.25     2.25     0.25     0.93     0.0      5.00     0.25     1.50     0.38     1.75
 39    2.75     4.15     3.00     0.75     0.53     0.0      0.78     0.25     0.0      0.20     1.38     0.0

+       37       38       39       40       41       42       43       44       45       46       47       48
 16    0.37     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 17    0.16     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 18    0.01     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 19    0.18     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 20    0.01     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 22    0.38     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 23    0.51     1.03     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 24    1.03     1.54     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 25    3.08     3.08     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 26    1.03     2.31     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
 27    1.03     0.28     0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0

SCALAR   CFMTAD   CONVERSION FACTOR FROM ACRE-FT PER MO    TO ACRE-FT PER MO.      /   1.0000/
         CFMDAD   CONVERSION FACTOR FROM ACRE-FT PER MO    TO ACRE-FT PER MO.      /   1.0000/;

         AAPR(I,J) = (AAPR(I,J) * CFMTAD)$BOUN(I,J);
         AMAY(I,J) = (AMAY(I,J) * CFMTAD)$BOUN(I,J);
         AJUN(I,J) = (AJUN(I,J) * CFMTAD)$BOUN(I,J);
         AJUL(I,J) = (AJUL(I,J) * CFMTAD)$BOUN(I,J);
         AAUG(I,J) = (AAUG(I,J) * CFMTAD)$BOUN(I,J);
         ASEP(I,J) = (ASEP(I,J) * CFMTAD)$BOUN(I,J);
         TAPR(I,J) = (TAPR(I,J) * CFMDAD)$BOUN(I,J);
         TMAY(I,J) = (TMAY(I,J) * CFMDAD)$BOUN(I,J);
         TJUN(I,J) = (TJUN(I,J) * CFMDAD)$BOUN(I,J);
         TJUL(I,J) = (TJUL(I,J) * CFMDAD)$BOUN(I,J);
         TAUG(I,J) = (TAUG(I,J) * CFMDAD)$BOUN(I,J);
         TSEP(I,J) = (TSEP(I,J) * CFMDAD)$BOUN(I,J);

PARAMETER SAPR(I,J)   1990 SURFACE WATER IN APRIL (ACRE-FT PER MONTH),
          SMAY(I,J)   1990 SURFACE WATER IN MAY (ACRE-FT PER MONTH),
          SJUN(I,J)   1990 SURFACE WATER IN JUNE (ACRE-FT PER MONTH),
          SJUL(I,J)   1990 SURFACE WATER IN JULY (ACRE-FT PER MONTH),
          SAUG(I,J)   1990 SURFACE WATER IN AUGUST (ACRE-FT PER MONTH),
          SSEP(I,J)   1990 SURFACE WATER IN SEPTEMBER (ACRE-FT PER MONTH),
          GAPR(I,J)   1990 GROUNDWATER FOR AGRICULTURAL USE IN APRIL (ACRE-FT PER MONTH),
          GMAY(I,J)   1990 GROUNDWATER FOR AGRICULTURAL USE IN MAY (ACRE-FT PER MONTH),
          GJUN(I,J)   1990 GROUNDWATER FOR AGRICULTURAL USE IN JUNE (ACRE-FT PER MONTH),
          GJUL(I,J)   1990 GROUNDWATER FOR AGRICULTURAL USE IN JULY (ACRE-FT PER MONTH),
          GAUG(I,J)   1990 GROUNDWATER FOR AGRICULTURAL USE IN AUGUST (ACRE-FT PER MONTH),
          GSEP(I,J)   1990 GROUNDWATER FOR AGRICULTURAL USE IN SEPTEMBER (ACRE-FT PER MONTH),
          UAPR(I,J)   1990 UNMET GROUNDWATER DEMAND FOR AGRICULTURAL USE IN APRIL (ACRE-FT PER MONTH),
          UMAY(I,J)   1990 UNMET GROUNDWATER DEMAND FOR AGRICULTURAL USE IN MAY (ACRE-FT PER MONTH),
          UJUN(I,J)   1990 UNMET GROUNDWATER DEMAND FOR AGRICULTURAL USE IN JUNE (ACRE-FT PER MONTH),
          UJUL(I,J)   1990 UNMET GROUNDWATER DEMAND FOR AGRICULTURAL USE IN JULY (ACRE-FT PER MONTH),
          UAUG(I,J)   1990 UNMET GROUNDWATER DEMAND FOR AGRICULTURAL USE IN AUGUST (ACRE-FT PER MONTH),
          USEP(I,J)   1990 UNMET GROUNDWATER DEMAND FOR AGRICULTURAL USE IN SEPT. (ACRE-FT PER MONTH),
          TSAPR   1990 TOTAL SURFACE WATER IN APRIL (ACRE-FT PER MONTH),
          TSMAY   1990 TOTAL SURFACE WATER IN MAY (ACRE-FT PER MONTH),
          TSJUN   1990 TOTAL SURFACE WATER IN JUNE (ACRE-FT PER MONTH),
          TSJUL   1990 TOTAL SURFACE WATER IN JULY (ACRE-FT PER MONTH),
          TSAUG   1990 TOTAL SURFACE WATER IN AUGUST (ACRE-FT PER MONTH),
          TSSEP   1990 TOTAL SURFACE WATER IN SEPTEMBER (ACRE-FT PER MONTH),
          TGAPR   1990 TOTAL GROUNDWATER FOR AGRICULTURAL USE IN APRIL (ACRE-FT PER MONTH),
          TGMAY   1990 TOTAL GROUNDWATER FOR AGRICULTURAL USE IN MAY (ACRE-FT PER MONTH),
          TGJUN   1990 TOTAL GROUNDWATER FOR AGRICULTURAL USE IN JUNE (ACRE-FT PER MONTH),
          TGJUL   1990 TOTAL GROUNDWATER FOR AGRICULTURAL USE IN JULY (ACRE-FT PER MONTH),
          TGAUG   1990 TOTAL GROUNDWATER FOR AGRICULTURAL USE IN AUGUST (ACRE-FT PER MONTH),
          TGSEP   1990 TOTAL GROUNDWATER FOR AGRICULTURAL USE IN SEPTEMBER (ACRE-FT PER MONTH),
          TUAPR   1990 TOTAL UNMET GROUNDWATER DEMAND FOR AGRI USE IN APRIL (ACRE-FT PER MONTH),
          TUMAY   1990 TOTAL UNMET GROUNDWATER DEMAND FOR AGRI USE IN MAY (ACRE-FT PER MONTH),
          TUJUN   1990 TOTAL UNMET GROUNDWATER DEMAND FOR AGRI USE IN JUNE (ACRE-FT PER MONTH),
          TUJUL   1990 TOTAL UNMET GROUNDWATER DEMAND FOR AGRI USE IN JULY (ACRE-FT PER MONTH),
          TUAUG   1990 TOTAL UNMET GROUNDWATER DEMAND FOR AGRI USE IN AUGUST (ACRE-FT PER MONTH),
          TUSEP   1990 TOTAL UNMET GROUNDWATER DEMAND FOR AGRI USE IN SEPT. (ACRE-FT PER MONTH),
          AMAI(I,J)      1990 MUNICIPAL AND INDUSTRIAL GROUNDWATER DEMAND (ACRE-FT PER YEAR),
          AGPAG(I,J)     1990 OPTIMAL GROUNDWATER PUMPING LESS M&I DEMAND (ACRE-FT PER YEAR),
          AGGP(I,J)      1990 OPTIMAL PUMPING (ACRE-FT PER YEAR);

          AMAI(I,J)                        = (WADT(I,J) - WADA(I,J))$BOUN(I,J);
          AMAI(I,J)$(AMAI(I,J) LT 0.0)     = 0.0;
          AGGP(I,J)                        = 0.0;
          AGPAG(I,J)                       = 0.0;
```

```
AGGP(I,J)$BOUN(I,J)            = GP.L(I,J) * (1.0 / SCFACV);
AGPAG(I,J)$BOUN(I,J)           = (AGGP(I,J) - AMAI(I,J))$(AGGP(I,J) GT AMAI(I,J));

GSEP(I,J)$BOUN(I,J) = 0.0 + (ASEP(I,J) - TSEP(I,J))$(AGPAG(I,J) GE (ASEP(I,J) -
                      TSEP(I,J))) + AGPAG(I,J)$(AGPAG(I,J) LT (ASEP(I,J) - TSEP(I,J)));

GAUG(I,J)$BOUN(I,J) = 0.0 + (AAUG(I,J) - TAUG(I,J))$((AGPAG(I,J) - GSEP(I,J) GE
                      (AAUG(I,J) - TAUG(I,J))) + (AGPAG(I,J) - GSEP(I,J))
                      $(AGPAG(I,J) - GSEP(I,J)) LT (AAUG(I,J) - TAUG(I,J)));

GJUL(I,J)$BOUN(I,J) = 0.0 + (AJUL(I,J) - TJUL(I,J))$((AGPAG(I,J) - GSEP(I,J) -
                      GAUG(I,J)) GE (AJUL(I,J) - TJUL(I,J))) + (AGPAG(I,J) -
                      GSEP(I,J) - GAUG(I,J))$((AG
                      GAUG(I,J)) LT (AJUL(I,J) - TJUL(I,J)));

GJUN(I,J)$BOUN(I,J) = 0.0 + (AJUN(I,J) - TJUN(I,J))$((AGPAG(I,J) -
                      GSEP(I,J) - GAUG(I,J) - GJUL(I,J)) GE (AJUN(I,J) -
                      TJUN(I,J))) + (AGPAG(I,J) - GSEP(I,J) - GAUG(I,J) -
                      GJUL(I,J))$((AGPAG(I,J) - GSEP(I,J) - GAUG(I,J) -
                      GJUL(I,J)) LT (AJUN(I,J) - TJUN(I,J)));

GMAY(I,J)$BOUN(I,J) = 0.0 + (AMAY(I,J) - TMAY(I,J))$((AGPAG(I,J) - GSEP(I,J) -
                      GAUG(I,J) - GJUL(I,J) - GJUN(I,J)) GE (AMAY(I,J) -
                      TMAY(I,J))) + (AGPAG(I,J) - GSEP(I,J) - GAUG(I,J) -
                      GJUL(I,J) - GJUN(I,J))$((AGPAG(I,J) - GSEP(I,J) -
                      GAUG(I,J) - GJUL(I,J) - GJUN(I,J)) LT (AMAY(I,J) -
                      TMAY(I,J)));

GAPR(I,J)$BOUN(I,J) = 0.0 + (AAPR(I,J) - TAPR(I,J))$((AGPAG(I,J) - GSEP(I,J) -
                      GAUG(I,J) - GJUL(I,J) - GJUN(I,J) - GMAY(I,J)) GE
                      (AAPR(I,J) - TAPR(I,J))) + (AGPAG(I,J) - GSEP(I,J) -
                      GAUG(I,J) - GJUL(I,J) - GJUN(I,J) - GMAY(I,J))
                      $((AGPAG(I,J) - GSEP(I,J) - GAUG(I,J) - GJUL(I,J) -
                      GJUN(I,J) - GMAY(I,J)) LT (AAPR(I,J) - TAPR(I,J)));

SAPR(I,J)$BOUN(I,J) = 0.0 +((AAPR(I,J) - TAPR(I,J)) - GAPR(I,J))
                       $(SSSW(I,J)GE ((AAPR(I,J) - TAPR(I,J)) - GAPR(I,J))) +
                      SSSW(I,J)$(SSSW(I,J) LT ((AAPR(I,J) - TAPR(I,J)) - GAPR(I,J)));

SMAY(I,J)$BOUN(I,J) = 0.0 + ((AMAY(I,J) - TMAY(I,J)) - GMAY(I,J))$((SSSW(I,J) -
                      SAPR(I,J)) GE ((AMAY(I,J) - TMAY(I,J)) - GMAY(I,J))) +
                      (SSSW(I,J) - SAPR(I,J))$((SSSW(I,J) - SAPR(I,J))
                      LT ((AMAY(I,J) - TMAY(I,J)) - GMAY(I,J)));

SJUN(I,J)$BOUN(I,J) = 0.0 + ((AJUN(I,J) - TJUN(I,J)) - GJUN(I,J))
                      $((SSSW(I,J) - SMAY(I,J) - SAPR(I,J))
                      GE ((AJUN(I,J) - TJUN(I,J)) - GJUN(I,J))) + (SSSW(I,J) -
                      SMAY(I,J) - SAPR(I,J))$((SSSW(I,J) - SMAY(I,J) -
                      SAPR(I,J)) LT ((AJUN(I,J) - TJUN(I,J)) - GJUN(I,J)));

SJUL(I,J)$BOUN(I,J) = 0.0 +((AJUL(I,J) - TJUL(I,J)) - GJUL(I,J))$((SSSW(I,J) -
                      SJUN(I,J) - SMAY(I,J) - SAPR(I,J)) GE ((AJUL(I,J) -
                      TJUL(I,J)) - GJUL(I,J))) + (SSSW(I,J) - SJUN(I,J) -
                      SMAY(I,J) - SAPR(I,J))$((SSSW(I,J) - SJUN(I,J) -
                      SMAY(I,J) - SAPR(I,J)) LT ((AJUL(I,J) - TJUL(I,J)) -
                      GJUL(I,J)));

SAUG(I,J)$BOUN(I,J) = 0.0 + ((AAUG(I,J) - TAUG(I,J)) - GAUG(I,J))
                      $((SSSW(I,J) - SJUL(I,J) - SJUN(I,J) - SMAY(I,J) -
                      SAPR(I,J)) GE ((AAUG(I,J) - TAUG(I,J)) - GAUG(I,J))) +
                      (SSSW(I,J) - SJUL(I,J) - SJUN(I,J) - SMAY(I,J) -
                      SAPR(I,J))$((SSSW(I,J) - SJUL(I,J) - SJUN(I,J) -
                      SMAY(I,J) - SAPR(I,J)) LT ((AAUG(I,J) - TAUG(I,J)) -
                      GAUG(I,J)));

SSEP(I,J)$BOUN(I,J) = 0.0 + ((ASEP(I,J) - TSEP(I,J)) - GSEP(I,J))$((SSSW(I,J) -
                      SAUG(I,J) - SJUL(I,J) - SJUN(I,J) - SMAY(I,J) -
                      SAPR(I,J)) GE ((ASEP(I,J) - TSEP(I,J)) - GSEP(I,J))) +
                      (SSSW(I,J) - SAUG(I,J) - SJUL(I,J) - SJUN(I,J) -
                      SMAY(I,J) - SAPR(I,J))$((SSSW(I,J) - SAUG(I,J) -
                      SJUL(I,J) - SJUN(I,J) - SMAY(I,J) - SAPR(I,J))
                      LT ((ASEP(I,J) - TSEP(I,J)) - GSEP(I,J)));

UAPR(I,J)$BOUN(I,J) = 0.0 + (AAPR(I,J) - TAPR(I,J)) - GAPR(I,J) - SAPR(I,J);
UMAY(I,J)$BOUN(I,J) = 0.0 + (AMAY(I,J) - TMAY(I,J)) - GMAY(I,J) - SMAY(I,J);
UJUN(I,J)$BOUN(I,J) = 0.0 + (AJUN(I,J) - TJUN(I,J)) - GJUN(I,J) - SJUN(I,J);
UJUL(I,J)$BOUN(I,J) = 0.0 + (AJUL(I,J) - TJUL(I,J)) - GJUL(I,J) - SJUL(I,J);
UAUG(I,J)$BOUN(I,J) = 0.0 + (AAUG(I,J) - TAUG(I,J)) - GAUG(I,J) - SAUG(I,J);
USEP(I,J)$BOUN(I,J) = 0.0 + (ASEP(I,J) - TSEP(I,J)) - GSEP(I,J) - SSEP(I,J);

TSAPR = SUM((I,J), SAPR(I,J)$BOUN(I,J)) + EPS;
TSMAY = SUM((I,J), SMAY(I,J)$BOUN(I,J)) + EPS;
TSJUN = SUM((I,J), SJUN(I,J)$BOUN(I,J)) + EPS;
TSJUL = SUM((I,J), SJUL(I,J)$BOUN(I,J)) + EPS;
TSAUG = SUM((I,J), SAUG(I,J)$BOUN(I,J)) + EPS;
TSSEP = SUM((I,J), SSEP(I,J)$BOUN(I,J)) + EPS;

TGAPR = SUM((I,J), GAPR(I,J)$BOUN(I,J)) + EPS;
TGMAY = SUM((I,J), GMAY(I,J)$BOUN(I,J)) + EPS;
TGJUN = SUM((I,J), GJUN(I,J)$BOUN(I,J)) + EPS;
TGJUL = SUM((I,J), GJUL(I,J)$BOUN(I,J)) + EPS;
TGAUG = SUM((I,J), GAUG(I,J)$BOUN(I,J)) + EPS;
TGSEP = SUM((I,J), GSEP(I,J)$BOUN(I,J)) + EPS;

TUAPR = SUM((I,J), UAPR(I,J)$BOUN(I,J)) + EPS;
TUMAY = SUM((I,J), UMAY(I,J)$BOUN(I,J)) + EPS;
TUJUN = SUM((I,J), UJUN(I,J)$BOUN(I,J)) + EPS;
TUJUL = SUM((I,J), UJUL(I,J)$BOUN(I,J)) + EPS;
TUAUG = SUM((I,J), UAUG(I,J)$BOUN(I,J)) + EPS;
TUSEP = SUM((I,J), USEP(I,J)$BOUN(I,J)) + EPS;
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            SAPR(I,J) = SAPR(I,J) + EPS;
            SMAY(I,J) = SMAY(I,J) + EPS;
            SJUN(I,J) = SJUN(I,J) + EPS;
            SJUL(I,J) = SJUL(I,J) + EPS;
            SAUG(I,J) = SAUG(I,J) + EPS;
            SSEP(I,J) = SSEP(I,J) + EPS;

            GAPR(I,J) = GAPR(I,J) + EPS;
            GMAY(I,J) = GMAY(I,J) + EPS;
            GJUN(I,J) = GJUN(I,J) + EPS;
            GJUL(I,J) = GJUL(I,J) + EPS;
            GAUG(I,J) = GAUG(I,J) + EPS;
            GSEP(I,J) = GSEP(I,J) + EPS;

            UAPR(I,J) = UAPR(I,J) + EPS;
            UMAY(I,J) = UMAY(I,J) + EPS;
            UJUN(I,J) = UJUN(I,J) + EPS;
            UJUL(I,J) = UJUL(I,J) + EPS;
            UAUG(I,J) = UAUG(I,J) + EPS;
            USEP(I,J) = USEP(I,J) + EPS;

DISPLAY BIND;
DISPLAY BBOUN;
DISPLAY IRIY;
DISPLAY BITOT;
DISPLAY BITOTC;
DISPLAY BITOTY;
DISPLAY BITOTNR;
DISPLAY BITOTR;
DISPLAY CCE;
OPTION  CCET:6;
DISPLAY CCET;
DISPLAY CCETA;
DISPLAY GGP;
DISPLAY GGPF;
DISPLAY TOTGW;
DISPLAY GWAD;
DISPLAY TOTGWAD;
DISPLAY XRGP;
DISPLAY HH;
DISPLAY HHA;
DISPLAY HHL;
DISPLAY HHS;
DISPLAY RRCH;
DISPLAY RRCHT;
DISPLAY RRCHTA;
DISPLAY GUSMIN;
DISPLAY ZGUSMINT;
DISPLAY RRCHGUS;
DISPLAY RRCHGUSX;
DISPLAY SSSW;
DISPLAY TOTSW;
DISPLAY TOTSWAD;
DISPLAY XRSSW;
DISPLAY TAP
DISPLAY TOTWAD;
DISPLAY XRTAPP;
DISPLAY ZDELEVH;
DISPLAY ZDELEVHA;
DISPLAY ZDELEVHX;
DISPLAY ZDELEVHY;
DISPLAY ZDRSH;
DISPLAY ZDRSHA;
DISPLAY ZDTOPOH;
DISPLAY ZDTOPOHA;
DISPLAY ZEXCESSW;
DISPLAY ZEXCESWT;
DISPLAY ZFSTHIC;
DISPLAY ZFSTHICA;
DISPLAY ZFSTHICX;
DISPLAY ZFSTHICY;
DISPLAY B;
DISPLAY ZISTHICA;
DISPLAY ZISTHICX;
DISPLAY ZISTHICY;
DISPLAY ZTGGP;
DISPLAY ZTHH;
DISPLAY ZTRRCH;
DISPLAY ZTRXPGP;
DISPLAY ZTRXPGPA;
DISPLAY ZTRXPT;
DISPLAY ZTRXPTA;
DISPLAY MAI;
DISPLAY MAIT;
DISPLAY MAIU;
DISPLAY MAIUT;
DISPLAY ZUGPD;
DISPLAY ZUGPDT;
DISPLAY ZUGPDTA;
DISPLAY ZUT;
DISPLAY ZUTT;
DISPLAY ZYCIIR;
DISPLAY ZYCIIRT;
DISPLAY ZYGPAG;
DISPLAY ZYOIIR;
DISPLAY ZYOIIRT;
DISPLAY ZYSAI;
DISPLAY ZYSAIT;
DISPLAY ZYSAIIR;
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DISPLAY ZYSAIIRT;
DISPLAY ZYSSWIR;
DISPLAY ZYSSWIRT;
DISPLAY ZZCIIR;
DISPLAY ZZDIIR;
DISPLAY ZZSAIIR;
DISPLAY ZZSSWIR;
DISPLAY TOTGWMI;
DISPLAY TOTWADA;
DISPLAY TOTWADD;
DISPLAY TOTWADS;
DISPLAY TOTWADT;
DISPLAY SAPR;
DISPLAY TSAPR;
DISPLAY SMAY;
DISPLAY TSMAY;
DISPLAY SJUN;
DISPLAY TSJUN;
DISPLAY SJUL;
DISPLAY TSJUL;
DISPLAY SAUG;
DISPLAY TSAUG;
DISPLAY SSEP;
DISPLAY TSSEP;
DISPLAY GAPR;
DISPLAY TGAPR;
DISPLAY GMAY;
DISPLAY TGMAY;
DISPLAY GJUN;
DISPLAY TGJUN;
DISPLAY GJUL;
DISPLAY TGJUL;
DISPLAY GAUG;
DISPLAY TGAUG;
DISPLAY GSEP;
DISPLAY TGSEP;
DISPLAY UAPR;
DISPLAY TUAPR;
DISPLAY UMAY;
DISPLAY TUMAY;
DISPLAY UJUN;
DISPLAY TUJUN;
DISPLAY UJUL;
DISPLAY TUJUL;
DISPLAY UAUG;
DISPLAY TUAUG;
DISPLAY USEP;
DISPLAY TUSEP;
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APPENDIX I

COMMANDS File Created by a VILMA Session
(CMA1990 COMMANDS A)

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TITLE EASTERN ARKANSAS COMPREHENSIVE STUDY AREA (MODEL CMA1990 )
MATRIX    BBOUN      1 3.0 :1 BIND 1 66
MATRIX    IRIV      1 2.0 :1 BIND 1 66
SCALAR    BITOT     1 4.0 :1
SCALAR    BITOTC    1 2.0 :0
SCALAR    BITOTV    1 4.0 :0
SCALAR    BITOTNR   1 4.0 :0
SCALAR    BITOTR    1 3.0 :0
MATRIX    CCE       1 9.2 :1 BIND 1 66
SCALAR    CCET      1 9.5 :0
SCALAR    CCETA     1 8.2 :0
MATRIX    GGP       1 5.2 :1 BIND 1 66
MATRIX    GGPF      1 5.2 :1 BIND 1 66
SCALAR    TOTGW     1 8.2 :0
MATRIX    GWAD      1 5.2 :1 BIND 1 66
SCALAR    TOTGWAD   1 8.2 :0
SCALAR    XRGP      1 2.2 :0
MATRIX    HH        1 3.1 :1 BIND 1 66
SCALAR    HHA       1 3.1 :0
SCALAR    HHL       1 3.1 :0
SCALAR    HHS       1 3.1 :0
MATRIX    RRCH      1 5.2 :1 BIND 1 66
SCALAR    RRCHT     1 7.2 :0
SCALAR    RRCHTA    1 5.2 :0
MATRIX    GUSMIN    1 6.2 :1 BIND 1 66
SCALAR    ZGUSMINT  1 7.2 :0
MATRIX    RRCHGUS   1 2.2 :1 BIND 1 66
SCALAR    RRCHGUSX  1 2.2 :0
MATRIX    SSSW      1 6.2 :1 BIND 1 66
SCALAR    TOTSW     1 8.2 :0
SCALAR    TOTSWAD   1 8.2 :0
SCALAR    XRSSW     1 2.2 :0
SCALAR    TAPP      1 8.2 :1
SCALAR    TOTWAD    1 9.2 :0
SCALAR    XRTAPP    1 2.2 :0
MATRIX    ZDELEVH   1 3.1 :1 BIND 1 66
SCALAR    ZDELEVHA  1 3.1 :0
SCALAR    ZDELEVHX  1 3.1 :0
SCALAR    ZDELEVHY  1 3.1 :0
MATRIX    ZDRSH     1 3.1 :1 BIND 1 66
SCALAR    ZDRSHA    1 3.1 :0
MATRIX    ZDTOPOH   1 3.1 :1 BIND 1 66
SCALAR    ZDTOPOHA  1 3.1 :0
MATRIX    ZEXCESSW  1 5.2 :1 BIND 1 66
SCALAR    ZEXCESWT  1 8.2 :0
MATRIX    ZFSTHIC   1 3.1 :1 BIND 1 66
SCALAR    ZFSTHICA  1 3.1 :0
SCALAR    ZFSTHICX  1 3.1 :0
SCALAR    ZFSTHICY  1 3.1 :0
MATRIX    B         1 3.1 :1 BIND 1 66
SCALAR    ZISTHICA  1 3.1 :0
SCALAR    ZISTHICX  1 3.1 :0
SCALAR    ZISTHICY  1 3.1 :0
MATRIX    ZTGGP     1 5.2 :1 BIND 1 66
MATRIX    ZTHH      1 3.1 :1 BIND 1 66
```

```
MATRIX    ZTRRCH    1 5.2 :1 BIND 1 66
MATRIX    ZTRXPGP   1 3.2 :1 BIND 1 66
SCALAR    ZTRXPGPA  1 3.2 :0
MATRIX    ZTRXPT    1 3.2 :1 BIND 1 66
SCALAR    ZTRXPTA   1 3.2 :0
MATRIX    MAI       1 5.2 :1 BIND 1 66
SCALAR    MAIT      1 8.2 :0
MATRIX    MAIU      1 5.2 :1 BIND 1 66
SCALAR    MAIUT     1 8.2 :0
MATRIX    ZUGPD     1 5.2 :1 BIND 1 66
SCALAR    ZUGPDT    1 8.2 :0
SCALAR    ZUGPDTA   1 5.2 :0
MATRIX    ZUT       1 5.2 :1 BIND 1 66
SCALAR    ZUTT      1 8.2 :0
VECTOR    ZYCIIR    1 9.2 :0
SCALAR    ZYCIIRT   1 9.2 :0
MATRIX    ZYGPAG    1 5.2 :1 BIND 1 66
VECTOR    ZYOIIR    1 8.2 :0
SCALAR    ZYOIIRT   1 9.2 :0
MATRIX    ZYSAI     1 8.2 :1 BIND 1 66
SCALAR    ZYSAIT    1 9.2 :0
VECTOR    ZYSAIIR   1 9.2 :0
SCALAR    ZYSAIIRT  1 9.2 :0
VECTOR    ZYSSWIR   1 9.2 :0
SCALAR    ZYSSWIRT  1 9.2 :0
VECTOR    ZZCIIR    1 9.2 :0
VECTOR    ZZOIIR    1 9.2 :0
VECTOR    ZZSAIIR   1 9.2 :0
VECTOR    ZZSSWIR   1 9.2 :0
SCALAR    TOTGWMI   1 9.0 :1
SCALAR    TOTWADA   1 9.0 :0
SCALAR    TOTWADD   1 9.0 :0
SCALAR    TOTWADS   1 9.0 :0
SCALAR    TOTWADT   1 9.0 :0
MATRIX    SAPR      1 5.2 :1 BIND 1 66
SCALAR    TSAPR     1 8.2 :0
MATRIX    SMAY      1 5.2 :1 BIND 1 66
SCALAR    TSMAY     1 8.2 :0
MATRIX    SJUN      1 5.2 :1 BIND 1 66
SCALAR    TSJUN     1 8.2 :0
MATRIX    SJUL      1 5.2 :1 BIND 1 66
SCALAR    TSJUL     1 8.2 :0
MATRIX    SAUG      1 5.2 :1 BIND 1 66
SCALAR    TSAUG     1 8.2 :0
MATRIX    SSEP      1 5.2 :1 BIND 1 66
SCALAR    TSSEP     1 8.2 :0
MATRIX    GAPR      1 5.2 :1 BIND 1 66
SCALAR    TGAPR     1 8.2 :0
MATRIX    GMAY      1 5.2 :1 BIND 1 66
SCALAR    TGMAY     1 8.2 :0
MATRIX    GJUN      1 5.2 :1 BIND 1 66
SCALAR    TGJUN     1 8.2 :0
MATRIX    GJUL      1 5.2 :1 BIND 1 66
SCALAR    TGJUL     1 8.2 :0
MATRIX    GAUG      1 5.2 :1 BIND 1 66
```

```
SCALAR    TGAUG     1 8.2 :0
MATRIX    GSEP      1 5.2 :1 BIND 1 66
SCALAR    TGSEP     1 8.2 :0
MATRIX    UAPR      1 5.2 :1 BIND 1 66
SCALAR    TUAPR     1 8.2 :0
MATRIX    UMAY      1 5.2 :1 BIND 1 66
SCALAR    TUMAY     1 8.2 :0
MATRIX    UJUN      1 5.2 :1 BIND 1 66
SCALAR    TUJUN     1 8.2 :0
MATRIX    UJUL      1 5.2 :1 BIND 1 66
SCALAR    TUJUL     1 8.2 :0
MATRIX    UAUG      1 5.2 :1 BIND 1 66
SCALAR    TUAUG     1 8.2 :0
MATRIX    USEP      1 5.2 :1 BIND 1 66
SCALAR    TUSEP     1 8.2 :0
```

APPENDIX J

Boundary Definition Data

UPDATED DATA FILE FOR: BOUNDARY ARRAY
DATA PROVIDED BY: U. S. GEOLOGICAL SURVEY, LITTLE ROCK, ARKANSAS.
DATA PROVIDED ON: MAY 20, 1988 CONTACT PERSON: GUS LUDWIG
FILE FORMAT: ROWWISE ENTRY FORMAT CODE: 2613
DATA TYPE: INTEGER DATA UNITS: NONE
MAXIMUM SIGNIFICANT DIGITS BEFORE THE DECIMAL PT: 2 AFTER THE DECIMAL PT: 0
CONVERSION FACTOR FROM NONE TO NONE = 1.0
DATA FILE LAST UPDATED ON: JUNE 15, 1988 TRAILER CARD: NO TRAILER CARD

```
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0  0-88-88-88-88-88-88-88-88-81-91-81-81 00-81-81-81-81-81-81-81-81-81  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0  0 88 88 88 88 88 88 88 83 83 81 81 81 00 81 81 81 81 81 91 81 81 90  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0 98 88 88 88 88 88 98 83 83 83 00 81 81 81 81 81 81 81 91 81 81 81 90  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0 98 88 88 88 88 98 83 83 83 83 00 91 81 81 81 81 81 91 81 81 81 81 90  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0 88 98 88 88 88 98 83 83 83 00 00 00 81 91 81 81 81 81 81 81 81 81 81 90  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0 88 98 88 88 98 83 83 83 00 00 00 81 81 81 81 81 81 91 81 81 81 81 81 90  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
88 98 88 98 88 83 83 83 83 00 00 00 81 81 81 81 81 81 91 81 81 81 81 81 90  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 88
98 98 98 88 83 83 83 83 00 00 00 81 81 81 91 81 81 91 81 81 81 81 81 90 90  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 98 88
98 88 88 83 83 83 83 00 00 81 81 81 81 91 81 81 81 91 81 81 81 81 90  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 88 98 88
85 85 83 83 83 83 00 00 00 81 81 81 91 81 81 81 91 81 81 81 81 81 81 90  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 88 88 85
85 83 93 83 83 00 00 00 81 81 81 81 91 81 81 91 81 81 81 81 81 81 81 90  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 88 88 88 85
83 83 93 83 83 00 00 00 81 81 81 91 81 81 81 91 81 81 81 81 81 81 90 90  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 98 88 85 85
83 93 83 83 00 00 00 81 81 81 91 81 81 81 91 81 81 81 81 81 81 81 90  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 98 88 88 85 85
93 83 83 83 00 00 00 81 81 91 81 81 81 81 91 81 81 81 81 81 81 90  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 88 98 88 85 85 85
93 83 83 00 00 00 00 81 81 91 81 81 81 81 91 81 81 81 81 81 81 90  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 88 98 88 85 85 85 83
93 83 83 00 00 00 81 81 81 91 81 81 81 81 91 81 81 81 81 81 81 90 90 90  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 88 98 88 85 85 83 83
93 83 00 00 00 00 81 81 91 81 81 81 81 81 91 81 81 81 81 81 81 90  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 88 98 85 85 83 83 83
83 00 00 00 00 81 81 81 91 81 81 81 81 81 91 81 81 81 81 81 81 81 90  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 88 98 85 85 85 83 93 83
83 83 00 00 81 81 81 81 81 91 81 81 81 91 81 81 81 81 81 81 81 90  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 85 98 85 85 85 83 83 93 83
83 83 83 00 81 81 81 81 81 91 81 81 91 81 81 81 81 81 90 90 90  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 88 88 85 85 85 83 83 83 83
83 83 82 82 00 81 81 81 91 81 81 91 81 81 81 81 81 90  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0 95 85 88 98 85 85 85 83 83 93 83 83
83 82 82 82 00 81 81 81 91 81 91 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 95 95 95 95 85 85 83 83 93 83 83
82 82 82 82 00 81 81 81 91 91 81 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 85 85 85 95 85 83 83 93 83 83 83
82 82 82 82 00 81 81 81 91 81 81 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 85 85 95 85 83 83 83 83 83 82
82 82 82 82 00 81 81 81 81 91 81 81 81 81 81 81 81 90 90  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 85 95 85 83 93 83 83 83 82
82 82 82 00 81 81 81 81 91 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 85 95 85 85 83 93 83 83 83 82
82 82 92 00 81 81 81 91 91 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 85 95 85 83 83 93 83 83 82 82
82 92 82 00 81 81 91 81 81 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0 85 95 85 85 83 83 93 83 83 82 82
82 92 82 00 81 81 91 81 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0 87 85 95 85 85 83 93 83 83 83 82 82
92 82 82 00 81 81 91 81 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0  0 87 87 85 95 85 83 83 93 83 83 82 82 82
92 82 82 00 81 81 91 81 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0  0 97 87 87 85 85 95 83 93 83 83 83 82 82 82
92 82 82 00 91 91 81 81 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0 88 88 87 97 97 97 95 95 83 93 83 83 83 82 82 82
92 82 82 00 91 81 81 81 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0 88 88 85 85 86 86 86 86 98 83 83 93 83 83 83 82 82 82
92 82 00 00 91 81 81 81 81 81 81 81 81 81 90 90  0  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0 88 86 86 88 86 86 86 86 98 83 93 83 83 83 83 83 82 82
92 82 00 00 91 81 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0  0  0  0
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92 82 00 00 91 81 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0 88 88 88 86 86 88 85 86 98 83 83 93 83 83 83 88 86 82 82
92 82 82 00 91 81 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0 00 86 88 86 86 88 86 86 88 96 83 83 93 83 83 88 86 88 86 82
92 82 82 00 91 91 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0  0  0  0 00 00 88 88 86 86 86 86 88 86 96 83 83 93 83 83 86 86 86 86 82
82 92 82 00 81 91 81 81 81 81 81 81 90  0  0  0  0  0  0  0  0  0  0  0  0  0
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82 92 82 81 81 91 81 81 81 81 81 90 90  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0  0  0 00 00 00 84 86 86 86 86 86 86 86 96 86 83 93 83 83 85 86 86 86 86
82 82 92 82 81 91 81 81 81 90 90  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0 84 84 94 84 84 84 84 84 86 86 86 86 86 86 96 83 93 83 86 88 86 86 86 86
86 86 92 82 82 91 81 81 90  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0 84 84 84 84 94 94 84 84 84 84 86 86 86 86 88 96 83 93 83 86 86 86 86 88 86
86 86 86 92 92 81 91 90 90  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0 99 99 89 84 84 84 84 84 84 84 86 86 86 86 88 88 95 93 86 86 86 86 86 86 86
86 86 86 86 00 91 90  0 90  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0 99 89 84 84 84 84 94 84 84 84 86 86 86 86 88 86 96 88 86 86 88 86 86 86
86 86 86 86 00 91 90  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
 0  0 99 89 89 84 84 84 84 94 84 84 84 86 86 88 86 86 96 86 86 86 86 86 88 86
86 86 86 86 86 00 90  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

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86	85	90	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	99	99	89	84	84	84	84	94	84	84	84	84	85	85	86	86	86	98	86	86
86	86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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86	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	99	99	84	84	84	94	84	84	86	86	86	86	86	96	89	86
90	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	99	99	84	84	94	84	86	86	86	88	98	86	86	86
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	99	99	95	99	84	86	86	86	98	86	88	88	86
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	86	86	86	86	88	86	86	86	90
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	99	99	98	88	98	90	90	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	99	86	90	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	85	90	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	90	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	86	90	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90	90	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX K

Initial Head Elevation Data

UPDATED DATA FILE FOR: 1972 INITIAL HEAD ELEVATION
DATA PROVIDED BY: U. S. GEOLOGICAL SURVEY, LITTLE ROCK, ARKANSAS.
DATA PROVIDED ON: MAY 20, 1988 CONTACT PERSON: GUS LUDWIG
FILE FORMAT: GAMS TABULAR FORM
DATA TYPE: REAL DATA UNITS: FT
MAXIMUM SIGNIFICANT DIGITS BEFORE THE DECIMAL PT:3 AFTER THE DECIMAL PT:0
CONVERSION FACTOR FROM FT TO FT =1.0
DATA FILE LAST UPDATED ON:JUNE 17, 1988 TRAILER CARD: LAST

TABLE ELEV(I,J) 1972 INITIAL HEAD ELEVATION (FT)

	1	2	3	4	5	6	7	8	9	10	11	12	13
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	206.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	213.0	214.0	203.0
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	208.0	209.0	208.0	205.0	193.0
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	208.0	206.0	204.0	192.0	181.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	205.0	201.0	195.0	184.0	177.0
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	209.0	206.0	198.0	182.0	177.0	172.0
38	0.0	0.0	0.0	0.0	0.0	0.0	223.0	208.0	206.0	197.0	176.0	173.0	168.0
39	0.0	0.0	0.0	0.0	0.0	264.0	242.0	206.0	200.0	192.0	174.0	170.0	166.0
40	0.0	0.0	0.0	0.0	233.0	275.0	252.0	194.0	177.0	169.0	158.0	161.0	158.0
41	0.0	0.0	0.0	0.0	205.0	251.0	229.0	175.0	166.0	157.0	146.0	143.0	149.0
42	0.0	0.0	213.0	209.0	206.0	203.0	183.0	166.0	160.0	152.0	140.0	137.0	137.0
43	0.0	229.0	226.0	220.0	213.0	198.0	192.0	169.0	157.0	147.0	136.0	133.0	129.0
44	0.0	231.0	232.0	233.0	218.0	198.0	188.0	161.0	155.0	150.0	140.0	133.0	128.0
45	0.0	0.0	228.0	230.0	219.0	208.0	187.0	157.0	158.0	148.0	142.0	134.0	127.0
46	0.0	0.0	225.0	229.0	217.0	207.0	187.0	176.0	171.0	156.0	147.0	143.0	125.0
47	0.0	0.0	224.0	225.0	219.0	203.0	186.0	177.0	174.0	169.0	154.0	146.0	130.0
48	0.0	0.0	0.0	216.0	213.0	198.0	188.0	183.0	174.0	172.0	167.0	154.0	140.0
49	0.0	0.0	0.0	212.0	208.0	198.0	189.0	182.0	173.0	170.0	168.0	157.0	140.0
50	0.0	0.0	0.0	207.0	203.0	198.0	193.0	182.0	175.0	170.0	165.0	162.0	151.0
51	0.0	0.0	0.0	203.0	205.0	198.0	194.0	184.0	174.0	170.0	163.0	162.0	165.0
52	0.0	0.0	0.0	0.0	197.0	193.0	193.0	189.0	175.0	168.0	163.0	159.0	160.0
53	0.0	0.0	0.0	0.0	193.0	192.0	192.0	190.0	179.0	170.0	166.0	166.0	169.0
54	0.0	0.0	0.0	0.0	0.0	191.0	191.0	189.0	182.0	175.0	172.0	172.0	168.0
55	0.0	0.0	0.0	0.0	0.0	0.0	188.0	186.0	183.0	179.0	176.0	174.0	169.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	183.0	180.0	178.0	176.0	174.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	179.0	177.0	175.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	173.0

+	14	15	16	17	18	19	20	21	22	23	24	25	26
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	254.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	257.0	254.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	259.0	258.0	257.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	257.0	256.0	256.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	253.0	253.0	253.0	253.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	249.0	248.0	247.0	248.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	246.0	248.0	244.0	243.0	243.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	242.0	243.0	242.0	242.0	240.0	240.0
16	0.0	0.0	0.0	0.0	0.0	0.0	235.0	238.0	239.0	238.0	238.0	237.0	236.0
17	0.0	0.0	0.0	0.0	0.0	0.0	229.0	233.0	235.0	234.0	233.0	231.0	228.0
18	0.0	0.0	0.0	0.0	0.0	0.0	223.0	228.0	231.0	229.0	227.0	225.0	218.0
19	0.0	0.0	0.0	0.0	0.0	219.0	220.0	226.0	232.0	229.0	224.0	219.0	211.0
20	0.0	0.0	0.0	0.0	220.0	221.0	222.0	226.0	232.0	229.0	224.0	216.0	206.0
21	0.0	0.0	0.0	0.0	217.0	219.0	220.0	224.0	227.0	224.0	219.0	212.0	202.0
22	0.0	211.0	210.0	210.0	210.0	210.0	214.0	221.0	221.0	218.0	212.0	207.0	196.0
23	0.0	0.0	208.0	208.0	205.0	203.0	207.0	217.0	217.0	213.0	207.0	200.0	188.0
24	0.0	0.0	205.0	206.0	203.0	201.0	207.0	214.0	213.0	208.0	198.0	190.0	184.0
25	0.0	0.0	0.0	201.0	201.0	202.0	207.0	211.0	209.0	201.0	190.0	184.0	180.0
26	0.0	0.0	0.0	0.0	198.0	201.0	209.0	210.0	207.0	197.0	188.0	182.0	179.0
27	0.0	0.0	0.0	194.0	193.0	198.0	206.0	209.0	204.0	193.0	185.0	182.0	179.0
28	0.0	0.0	0.0	194.0	192.0	197.0	204.0	204.0	197.0	187.0	183.0	180.0	178.0
29	0.0	0.0	203.0	197.0	195.0	198.0	200.0	198.0	192.0	183.0	181.0	179.0	176.0
30	0.0	203.0	201.0	198.0	196.0	195.0	197.0	195.0	190.0	182.0	179.0	177.0	174.0
31	201.0	199.0	197.0	195.0	193.0	192.0	192.0	191.0	186.0	181.0	175.0	174.0	173.0
32	195.0	190.0	190.0	191.0	191.0	190.0	189.0	188.0	187.0	182.0	175.0	173.0	172.0
33	187.0	184.0	184.0	187.0	188.0	188.0	188.0	186.0	186.0	183.0	177.0	173.0	175.0
34	184.0	181.0	181.0	184.0	186.0	185.0	185.0	184.0	183.0	181.0	177.0	176.0	177.0
35	177.0	177.0	179.0	182.0	183.0	184.0	183.0	181.0	177.0	174.0	174.0	174.0	176.0
36	173.0	174.0	175.0	179.0	180.0	181.0	182.0	179.0	172.0	170.0	171.0	173.0	175.0
37	169.0	170.0	172.0	176.0	177.0	178.0	180.0	179.0	167.0	163.0	165.0	168.0	173.0
38	161.0	162.0	169.0	172.0	173.0	173.0	175.0	173.0	165.0	161.0	162.0	164.0	170.0
39	158.0	155.0	162.0	170.0	171.0	168.0	168.0	167.0	161.0	159.0	160.0	163.0	168.0
40	154.0	156.0	161.0	168.0	170.0	168.0	165.0	164.0	160.0	158.0	160.0	164.0	171.0
41	151.0	152.0	157.0	165.0	170.0	166.0	164.0	164.0	161.0	160.0	162.0	169.0	177.0
42	145.0	147.0	150.0	162.0	167.0	165.0	163.0	164.0	161.0	160.0	164.0	171.0	176.0
43	130.0	131.0	145.0	151.0	158.0	162.0	161.0	162.0	163.0	162.0	167.0	171.0	174.0
44	125.0	126.0	139.0	143.0	148.0	160.0	164.0	163.0	163.0	164.0	168.0	172.0	175.0
45	123.0	122.0	130.0	135.0	142.0	155.0	163.0	165.0	164.0	163.0	168.0	173.0	176.0
46	116.0	114.0	120.0	134.0	140.0	146.0	157.0	166.0	157.0	156.0	171.0	173.0	174.0
47	114.0	109.0	111.0	129.0	139.0	141.0	150.0	162.0	165.0	166.0	169.0	171.0	172.0
48	130.0	109.0	105.0	119.0	127.0	139.0	142.0	153.0	158.0	162.0	165.0	167.0	169.0
49	127.0	111.0	105.0	114.0	122.0	135.0	138.0	144.0	153.0	157.0	160.0	163.0	165.0
50	127.0	113.0	109.0	108.0	114.0	128.0	135.0	137.0	144.0	151.0	154.0	158.0	159.0
51	140.0	119.0	109.0	105.0	110.0	121.0	134.0	138.0	140.0	145.0	147.0	150.0	150.0
52	138.0	121.0	107.0	101.0	101.0	113.0	126.0	131.0	137.0	141.0	141.0	144.0	145.0
53	140.0	125.0	105.0	102.0	98.8	104.0	115.0	124.0	134.0	139.0	140.0	141.0	142.0
54	156.0	134.0	117.0	108.0	98.7	102.0	112.0	120.0	130.0	135.0	139.0	140.0	141.0
55	155.0	138.0	120.0	114.0	101.0	101.0	111.0	117.0	129.0	133.0	138.0	139.0	140.0
56	168.0	152.0	125.0	115.0	104.0	104.0	112.0	116.0	126.0	132.0	139.0	142.0	141.0
57	172.0	161.0	145.0	125.0	119.0	112.0	117.0	123.0	129.0	134.0	141.0	143.0	142.0
58	169.0	160.0	147.0	137.0	135.0	126.0	127.0	128.0	131.0	136.0	140.0	140.0	140.0
59	165.0	166.0	144.0	140.0	139.0	142.0	134.0	132.0	133.0	137.0	139.0	138.0	137.0
60	0.0	0.0	0.0	146.0	151.0	152.0	143.0	135.0	135.0	137.0	138.0	137.0	138.0
61	0.0	0.0	0.0	0.0	149.0	149.0	145.0	140.0	137.0	138.0	138.0	137.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	138.0	138.0	138.0	137.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	138.0	138.0	137.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	137.0	137.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	135.0	136.0	136.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	133.0	135.0	0.0	0.0

+	27	28	29	30	31	32	33	34	35	36	37	38	39
1	0.0	0.0	0.0	300.0	300.0	300.0	300.0	300.0	299.0	300.0	301.0	301.0	298.0
2	0.0	0.0	0.0	294.0	295.0	295.0	295.0	296.0	297.0	297.0	299.0	297.0	294.0
3	0.0	0.0	288.0	289.0	289.0	290.0	290.0	291.0	292.0	293.0	294.0	292.0	290.0
4	0.0	0.0	282.0	283.0	284.0	284.0	285.0	287.0	288.0	288.0	288.0	286.0	283.0
5	0.0	273.0	276.0	278.0	278.0	279.0	282.0	283.0	283.0	283.0	282.0	280.0	277.0
6	0.0	268.0	271.0	273.0	273.0	276.0	278.0	278.0	277.0	277.0	276.0	273.0	271.0
7	257.0	260.0	267.0	270.0	270.0	272.0	274.0	273.0	272.0	270.0	268.0	267.0	265.0
8	254.0	257.0	264.0	266.0	266.0	267.0	269.0	268.0	266.0	263.0	262.0	261.0	260.0
9	253.0	257.0	262.0	262.0	262.0	262.0	263.0	261.0	258.0	256.0	255.0	255.0	255.0
10	256.0	259.0	262.0	261.0	260.0	259.0	258.0	253.0	251.0	251.0	250.0	250.0	250.0
11	256.0	258.0	260.0	259.0	258.0	255.0	249.0	246.0	245.0	245.0	245.0	244.0	244.0
12	254.0	257.0	257.0	258.0	256.0	252.0	242.0	237.0	237.0	238.0	240.0	240.0	241.0
13	250.0	253.0	254.0	254.0	253.0	247.0	237.0	232.0	231.0	235.0	237.0	238.0	238.0
14	248.0	250.0	251.0	250.0	249.0	242.0	232.0	227.0	226.0	232.0	235.0	235.0	235.0
15	244.0	244.0	247.0	246.0	244.0	238.0	231.0	229.0	228.0	229.0	230.0	230.0	231.0
16	240.0	243.0	242.0	240.0	238.0	234.0	231.0	231.0	230.0	227.0	226.0	226.0	227.0
17	228.0	234.0	234.0	231.0	231.0	231.0	229.0	228.0	227.0	226.0	224.0	224.0	225.0
18	215.0	215.0	217.0	222.0	226.0	226.0	226.0	226.0	225.0	224.0	223.0	224.0	224.0
19	208.0	208.0	205.0	218.0	222.0	222.0	222.0	222.0	222.0	222.0	221.0	221.0	222.0
20	202.0	200.0	200.0	207.0	215.0	217.0	218.0	218.0	219.0	220.0	220.0	220.0	220.0
21	196.0	195.0	198.0	197.0	202.0	209.0	214.0	216.0	218.0	217.0	218.0	219.0	218.0
22	189.0	188.0	188.0	189.0	193.0	204.0	212.0	214.0	211.0	212.0	214.0	217.0	218.0
23	184.0	183.0	183.0	184.0	188.0	202.0	209.0	210.0	206.0	207.0	209.0	212.0	216.0
24	181.0	181.0	180.0	181.0	185.0	198.0	203.0	204.0	202.0	203.0	205.0	207.0	213.0
25	179.0	178.0	176.0	176.0	182.0	192.0	197.0	199.0	201.0	203.0	202.0	204.0	212.0
26	176.0	174.0	175.0	177.0	180.0	188.0	194.0	197.0	198.0	200.0	200.0	202.0	208.0
27	176.0	174.0	174.0	175.0	178.0	186.0	191.0	193.0	193.0	195.0	197.0	200.0	205.0
28	176.0	176.0	176.0	178.0	179.0	185.0	188.0	189.0	189.0	191.0	195.0	198.0	203.0
29	175.0	176.0	176.0	177.0	180.0	184.0	187.0	188.0	188.0	190.0	195.0	199.0	202.0
30	174.0	176.0	177.0	177.0	179.0	182.0	184.0	186.0	187.0	190.0	195.0	198.0	201.0
31	174.0	175.0	175.0	178.0	179.0	180.0	181.0	183.0	185.0	190.0	194.0	197.0	200.0
32	175.0	176.0	175.0	178.0	179.0	179.0	179.0	181.0	186.0	190.0	194.0	197.0	199.0
33	179.0	180.0	180.0	178.0	178.0	177.0	178.0	180.0	185.0	190.0	194.0	197.0	197.0
34	182.0	183.0	181.0	179.0	176.0	177.0	176.0	179.0	184.0	189.0	193.0	195.0	194.0
35	182.0	183.0	183.0	178.0	176.0	175.0	177.0	178.0	182.0	188.0	191.0	192.0	191.0
36	180.0	182.0	181.0	174.0	172.0	174.0	176.0	178.0	181.0	186.0	187.0	187.0	188.0
37	180.0	182.0	181.0	173.0	171.0	172.0	174.0	177.0	180.0	182.0	184.0	184.0	184.0
38	180.0	182.0	186.0	180.0	173.0	173.0	173.0	174.0	178.0	180.0	181.0	181.0	181.0
39	178.0	184.0	187.0	186.0	178.0	174.0	172.0	172.0	176.0	178.0	179.0	179.0	179.0
40	178.0	184.0	186.0	184.0	178.0	176.0	178.0	177.0	177.0	177.0	177.0	177.0	177.0
41	181.0	183.0	181.0	179.0	175.0	176.0	180.0	181.0	179.0	177.0	176.0	0.0	0.0
42	181.0	182.0	179.0	178.0	175.0	174.0	178.0	178.0	177.0	0.0	0.0	0.0	0.0
43	179.0	183.0	184.0	184.0	177.0	176.0	178.0	176.0	175.0	0.0	0.0	0.0	0.0
44	180.0	185.0	191.0	194.0	187.0	183.0	180.0	0.0	174.0	0.0	0.0	0.0	0.0
45	178.0	183.0	192.0	197.0	197.0	192.0	187.0	0.0	0.0	0.0	0.0	0.0	0.0
46	176.0	180.0	188.0	194.0	197.0	195.0	192.0	0.0	0.0	0.0	0.0	0.0	0.0
47	173.0	175.0	178.0	181.0	183.0	183.0	180.0	0.0	0.0	0.0	0.0	0.0	0.0
48	169.0	167.0	166.0	166.0	169.0	172.0	172.0	172.0	0.0	0.0	0.0	0.0	0.0
49	164.0	161.0	160.0	161.0	165.0	167.0	167.0	0.0	0.0	0.0	0.0	0.0	0.0
50	158.0	158.0	160.0	162.0	165.0	165.0	164.0	0.0	0.0	0.0	0.0	0.0	0.0
51	151.0	154.0	159.0	162.0	164.0	163.0	162.0	0.0	0.0	0.0	0.0	0.0	0.0
52	146.0	150.0	157.0	160.0	161.0	162.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	144.0	147.0	153.0	158.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	143.0	146.0	149.0	153.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	142.0	144.0	146.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	141.0	142.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	141.0	141.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	139.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	137.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	136.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	40	41	42	43	44	45	46	47	48	49	50	51	52
1	298.0	290.0	285.0	285.0	284.0	281.0	276.0	273.0	271.0	272.0	274.0	275.0	0.0
2	291.0	287.0	283.0	282.0	281.0	277.0	272.0	270.0	268.0	269.0	273.0	274.0	0.0
3	287.0	283.0	280.0	279.0	277.0	273.0	269.0	268.0	268.0	270.0	274.0	274.0	0.0
4	281.0	278.0	275.0	273.0	271.0	268.0	266.0	265.0	267.0	271.0	272.0	272.0	0.0
5	275.0	273.0	269.0	268.0	266.0	263.0	263.0	263.0	263.0	268.0	271.0	270.0	0.0
6	269.0	267.0	265.0	263.0	261.0	259.0	260.0	260.0	261.0	265.0	267.0	276.0	0.0
7	263.0	262.0	260.0	258.0	256.0	255.0	256.0	256.0	258.0	261.0	262.0	262.0	0.0
8	258.0	257.0	255.0	253.0	252.0	252.0	253.0	253.0	254.0	258.0	257.0	257.0	0.0
9	253.0	252.0	251.0	250.0	248.0	247.0	249.0	250.0	253.0	254.0	0.0	0.0	0.0
10	248.0	248.0	248.0	246.0	245.0	244.0	246.0	250.0	253.0	252.0	250.0	0.0	0.0
11	244.0	244.0	243.0	243.0	245.0	246.0	247.0	250.0	253.0	252.0	249.0	0.0	0.0
12	240.0	240.0	239.0	240.0	244.0	247.0	247.0	248.0	252.0	252.0	250.0	0.0	0.0
13	238.0	238.0	237.0	237.0	240.0	244.0	246.0	247.0	249.0	250.0	0.0	0.0	0.0
14	237.0	238.0	238.0	238.0	239.0	241.0	243.0	245.0	246.0	0.0	0.0	0.0	0.0
15	234.0	235.0	235.0	235.0	238.0	240.0	242.0	243.0	244.0	244.0	0.0	0.0	0.0
16	229.0	231.0	231.0	233.0	237.0	239.0	241.0	241.0	241.0	242.0	242.0	0.0	0.0
17	226.0	227.0	228.0	230.0	235.0	238.0	239.0	239.0	238.0	0.0	0.0	0.0	0.0
18	224.0	225.0	228.0	227.0	232.0	236.0	236.0	236.0	235.0	235.0	0.0	0.0	0.0
19	223.0	224.0	225.0	227.0	231.0	233.0	234.0	233.0	233.0	0.0	0.0	0.0	0.0
20	222.0	223.0	226.0	229.0	231.0	232.0	232.0	232.0	0.0	0.0	0.0	0.0	0.0
21	219.0	222.0	226.0	229.0	230.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	218.0	221.0	225.0	228.0	228.0	229.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	218.0	220.0	223.0	226.0	228.0	227.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	219.0	221.0	223.0	224.0	224.0	225.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	222.0	224.0	223.0	222.0	222.0	223.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	218.0	221.0	220.0	220.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	213.0	217.0	217.0	217.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	208.0	212.0	214.0	215.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	205.0	208.0	211.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	204.0	206.0	208.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	202.0	204.0	205.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	200.0	201.0	203.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	198.0	198.0	199.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	194.0	195.0	198.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	191.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	188.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

LAST

UPDATED DATA FILE FOR: WITH CONSERVATION INITIAL HEAD ELEVATION
DATA PROVIDED BY: UNIVERSITY OF ARKANSAS, FAYETTEVILLE, ARKANSAS.
DATA PROVIDED ON: JUNE 30,1988 CONTACT PERSON: ROSALINDA CANTILLER
FILE FORMAT: GAMS TABULAR FORM
DATA TYPE: REAL DATA UNITS: FT
MAXIMUM SIGNIFICANT DIGITS BEFORE THE DECIMAL PT:3 AFTER THE DECIMAL PT:1
CONVERSION FACTOR FROM FT TO FT =1.0
DATA FILE LAST UPDATED ON:JUNE 30, 1988 TRAILER CARD: LAST
TABLE ELEV(I,J) CONHEADS OPTIMAL HEAD (FT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	199.5
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	193.9
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6	199.0	195.3	198.6
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	201.2	198.0	198.4
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	191.0	183.0	181.4
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	175.0	177.9
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.2
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	180.9	195.2
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.5	191.7
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	186.0	192.4	176.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	169.7	177.0	190.8	176.8
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	169.1	153.7	173.1	189.4	180.1
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	181.2	161.0	160.7	170.2	184.5	190.5
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.3	168.0	166.0	163.7	164.5	170.8	183.8	186.6
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	177.0	170.5	163.9	152.7	138.0	138.0	141.8	163.7	172.1	172.3
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	164.8	159.3	149.9	128.2	125.0	127.0	122.0	144.6	185.4	168.3
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.3	157.2	125.0	120.0	119.7	111.9	127.7	150.5	159.1	162.2
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	197.8	179.3	159.9	122.0	116.1	101.8	98.8	124.0	150.3	156.0	158.4
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	195.1	183.4	160.2	118.0	98.8	98.4	99.1	118.7	151.0	156.0	156.8
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	187.4	171.2	141.4	114.1	92.1	105.4	100.0	108.7	148.1	156.7	158.2
40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	172.0	152.5	130.9	109.8	96.2	98.7	82.7	104.3	145.8	153.4	158.6
41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	126.0	113.0	103.8	89.7	98.8	102.4	102.5	124.2	144.0	150.3	154.2
42	0.0	0.0	185.0	190.1	203.2	189.1	145.0	112.5	98.7	93.3	90.3	109.4	116.0	116.1	121.7	133.9	148.8	153.5
43	0.0	231.9	223.2	211.4	196.1	193.1	173.0	108.5	80.3	93.9	105.1	106.4	109.5	110.8	110.0	101.4	141.5	147.8
44	0.0	238.3	235.8	222.4	199.3	186.2	154.1	127.8	93.2	84.2	87.2	101.9	105.3	105.6	102.9	91.1	116.4	140.5
45	0.0	0.0	234.2	222.1	205.3	187.2	161.8	102.8	119.3	99.2	90.0	102.2	104.6	103.9	101.4	98.9	97.4	120.8
46	0.0	0.0	227.9	219.0	205.4	189.4	180.0	135.1	108.3	129.4	111.5	102.7	106.2	104.2	100.5	96.4	89.5	107.3
47	0.0	0.0	222.4	214.4	205.1	189.7	183.1	147.4	142.5	138.8	143.8	125.0	113.4	106.8	101.2	93.5	84.6	92.5
48	0.0	0.0	0.0	215.8	200.2	189.0	170.4	150.9	146.2	144.3	142.3	141.8	114.7	108.1	103.8	93.5	77.7	90.5
49	0.0	0.0	0.0	212.9	197.3	187.6	177.4	152.4	139.3	138.4	139.1	145.0	123.8	104.9	102.7	94.0	88.0	85.4
50	0.0	0.0	0.0	209.2	194.1	187.1	176.8	153.0	132.2	126.0	134.5	142.0	143.2	113.0	104.4	96.1	87.9	85.2
51	0.0	0.0	0.0	205.8	196.3	184.9	179.7	156.6	129.8	122.5	124.3	137.9	142.3	142.0	103.7	96.3	85.4	73.9
52	0.0	0.0	0.0	0.0	204.8	191.5	179.4	161.1	140.4	124.7	123.0	141.0	148.5	132.9	115.2	99.9	86.0	73.2
53	0.0	0.0	0.0	0.0	204.9	191.5	183.3	171.0	152.3	132.9	124.7	144.2	146.9	145.7	121.0	102.4	85.1	71.2
54	0.0	0.0	0.0	0.0	0.0	197.5	185.2	180.5	163.2	143.0	139.2	149.3	150.8	148.0	115.6	98.2	83.1	70.5
55	0.0	0.0	0.0	0.0	0.0	0.0	193.5	187.5	175.5	157.5	155.6	153.8	152.8	149.1	123.5	91.2	79.9	66.9
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.5	182.9	185.2	156.2	149.5	149.3	142.0	108.0	78.0	59.5
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	179.3	176.2	158.0	151.4	144.1	137.3	109.7	81.5
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	171.4	168.9	151.3	143.3	135.4	101.8
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	168.9	164.2	152.8	154.8	113.2
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	154.8	129.5
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	148.3
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	300.0	300.0	300.0	300.0	300.0	299.0	300.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	287.5	288.2	289.4	290.7	292.2	293.5	295.3
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	270.7	276.6	278.4	280.4	282.6	285.3	288.8	291.8
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	261.8	263.8	267.3	270.2	273.8	277.9	282.9	288.2
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	247.0	251.9	247.4	248.5	254.2	262.7	269.5	275.0	281.8
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	240.4	246.7	240.0	238.5	246.3	249.4	257.5	263.5	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237.2	243.5	236.7	239.3	235.3	230.6	232.0	238.6	253.7	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	244.4	243.5	243.3	238.9	232.5	225.2	221.5	222.7	227.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	240.5	239.5	238.9	236.6	230.2	222.8	219.9	220.4	219.7	0.0	0.0	211.4
10	0.0	0.0	0.0	0.0	0.0	238.2	234.9	226.3	225.9	224.1	223.0	219.1	219.2	226.0	0.0	0.0	0.0	205.1
11	0.0	0.0	0.0	0.0	0.0	236.2	223.5	218.0	217.9	220.9	236.1	219.4	219.8	0.0	0.0	0.0	200.5	197.9
12	0.0	0.0	0.0	0.0	237.7	223.8	218.2	215.9	214.1	220.6	235.9	218.5	218.6	-0.0	0.0	0.0	190.0	189.0
13	0.0	0.0	0.0	0.0	234.7	220.6	216.1	213.7	217.4	229.0	219.2	213.8	0.0	-0.0	0.0	202.9	192.5	198.9
14	0.0	0.0	0.0	232.0	222.5	211.5	210.9	212.5	228.5	214.7	211.9	214.6	0.0	0.0	0.0	198.4	205.5	223.1
15	0.0	0.0	222.4	224.9	213.4	206.1	205.8	210.9	227.6	211.1	206.4	0.0	0.0	0.0	0.0	189.3	207.8	223.7
16	0.0	204.8	220.4	208.8	205.1	199.9	200.5	206.3	223.4	209.3	204.9	0.0	0.0	0.0	178.0	185.3	203.0	219.3
17	0.0	197.4	216.3	203.7	198.6	196.1	187.6	205.2	219.0	210.7	0.0	0.0	0.0	0.0	172.5	188.8	215.1	210.3
18	0.0	199.2	214.4	201.6	198.8	196.7	201.8	211.3	197.9	0.0	0.0	0.0	0.0	157.0	163.9	183.5	212.1	207.3
19	196.6	202.2	201.2	197.0	196.6	198.3	210.4	191.4	174.3	160.0	0.0	0.0	152.4	155.8	159.9	174.8	195.3	209.9
20	201.7	197.9	196.3	192.4	192.1	197.8	207.4	178.2	157.8	145.9	147.7	0.0	158.1	154.8	159.9	174.3	194.0	207.8

21	199.2	193.1	181.0	190.9	191.7	205.8	190.9	155.4	147.0	137.0	147.2	150.2	0.0	151.3	160.7	177.3	203.2	202.5
22	195.5	183.9	181.1	184.6	189.4	204.1	182.5	164.4	139.9	128.0	131.1	140.0	0.0	137.8	150.6	173.5	201.8	197.9
23	207.8	186.2	184.1	182.8	188.8	197.7	188.8	150.5	132.3	120.4	122.0	131.0	0.0	128.2	141.9	164.4	195.5	196.5
24	203.5	180.4	181.1	184.4	192.5	171.4	148.8	134.5	120.2	114.1	115.5	111.3	0.0	102.9	130.4	166.0	188.1	179.3
25	199.7	180.5	180.1	192.1	175.9	153.5	132.5	122.1	113.4	110.4	106.5	108.4	0.0	109.3	113.5	146.0	170.7	180.4
26	187.1	181.3	179.2	190.6	167.0	141.8	120.4	115.2	117.6	117.3	118.9	0.0	128.0	126.4	121.7	148.3	151.5	139.7
27	180.4	176.1	177.7	187.9	162.4	137.0	114.4	101.3	97.3	111.3	135.3	0.0	131.8	136.0	137.6	153.5	154.7	114.0
28	176.1	170.3	173.9	184.2	155.7	134.0	105.1	93.2	106.9	134.3	122.7	0.0	130.3	137.2	150.2	129.2	120.0	116.8
29	173.8	172.5	173.9	180.0	150.2	128.8	110.6	105.9	116.5	137.2	119.8	0.0	120.7	123.5	149.0	115.6	119.4	122.6
30	174.0	173.9	182.4	185.7	142.7	123.1	104.2	108.1	135.9	125.0	121.0	0.0	105.0	116.4	147.7	121.8	116.4	120.9
31	172.8	174.7	179.2	159.2	137.0	111.7	97.7	111.4	144.2	122.5	119.9	0.0	111.1	121.5	142.0	110.9	117.6	114.7
32	175.9	178.7	166.8	151.2	132.4	106.4	92.2	110.5	146.6	121.3	111.3	0.0	154.2	147.9	130.0	113.8	115.5	111.1
33	174.7	177.7	161.8	148.1	132.3	107.5	92.8	109.9	145.8	124.8	122.6	0.0	157.2	127.9	110.0	108.1	114.1	116.9
34	173.2	177.4	150.5	145.3	128.3	105.3	94.0	114.9	145.7	125.3	0.0	0.0	158.8	118.4	111.2	107.5	102.3	118.5
35	175.1	168.9	157.0	142.8	124.4	113.9	108.0	126.5	147.0	127.1	0.0	0.0	156.2	122.4	110.4	102.4	108.3	111.1
36	170.2	164.7	153.3	138.3	115.6	94.4	98.8	120.8	143.1	128.1	0.0	0.0	154.8	112.3	97.3	98.4	98.3	109.5
37	167.4	160.8	150.1	131.2	97.6	93.9	95.7	110.8	138.8	125.0	125.3	0.0	153.5	121.3	99.1	103.8	115.4	133.2
38	164.1	156.5	145.8	102.7	101.8	102.6	102.3	101.4	135.0	124.2	133.3	0.0	154.7	145.3	122.4	117.2	125.2	138.6
39	159.5	150.8	138.9	91.8	99.4	103.2	104.6	108.0	117.7	138.9	138.2	0.0	140.1	146.9	125.6	124.7	134.9	149.0
40	155.9	148.8	131.9	86.3	95.4	101.4	100.4	101.4	100.8	136.9	137.0	113.5	127.5	147.0	139.6	130.4	144.0	164.1
41	157.1	147.9	129.9	89.6	88.7	101.9	89.0	90.5	103.4	125.1	138.6	119.5	123.5	145.4	137.0	140.9	152.4	184.9
42	156.5	145.0	130.2	116.2	112.7	117.1	118.0	122.8	128.0	136.7	144.3	130.2	129.8	146.8	141.6	151.3	170.8	0.0
43	152.1	137.5	126.0	118.5	118.8	119.1	122.7	128.9	133.2	142.5	147.8	149.4	147.8	147.8	160.1	169.4	188.0	0.0
44	149.3	133.9	125.5	119.2	117.9	119.3	122.4	126.3	135.2	148.8	150.1	154.1	0.0	184.8	172.1	0.0	169.2	0.0
45	137.3	130.9	124.0	121.3	121.8	127.0	123.7	125.2	131.5	139.9	147.0	156.0	0.0	172.2	175.6	0.0	0.0	0.0
46	132.2	132.2	124.4	123.0	123.2	125.7	123.2	123.2	129.0	134.1	138.9	143.4	148.6	0.0	187.8	0.0	0.0	0.0
47	128.9	135.0	129.8	125.9	125.0	121.9	124.1	127.0	128.0	130.3	122.5	125.2	142.3	0.0	183.8	0.0	0.0	0.0
48	116.6	132.8	133.9	123.8	119.9	118.7	120.2	130.3	125.5	119.4	100.8	98.0	117.0	143.2	0.0	0.0	0.0	0.0
49	108.9	128.1	132.8	129.2	125.0	117.6	115.9	118.1	114.3	93.5	83.8	84.8	110.2	143.1	164.1	0.0	0.0	0.0
50	98.8	112.6	127.4	131.2	128.8	119.7	118.5	111.6	108.1	97.5	98.2	107.1	124.8	140.2	163.1	0.0	0.0	0.0
51	80.9	97.9	111.3	127.1	129.1	118.0	112.7	93.3	79.2	82.3	108.7	127.4	137.2	152.3	180.8	0.0	0.0	0.0
52	69.2	89.4	96.9	110.5	123.7	117.2	108.3	80.4	88.1	84.8	121.6	155.8	158.7	159.9	0.0	0.0	0.0	0.0
53	61.8	77.0	86.2	99.1	113.0	121.1	104.4	78.4	73.6	94.5	128.9	158.3	0.0	0.0	0.0	0.0	0.0	0.0
54	57.3	71.1	78.5	83.3	107.4	120.7	99.8	88.4	92.4	115.4	153.5	158.2	0.0	0.0	0.0	0.0	0.0	0.0
55	53.2	57.6	78.8	92.0	108.3	123.0	112.8	102.0	115.9	135.2	154.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	55.0	63.1	81.5	100.0	114.5	128.7	115.8	115.5	133.1	149.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	68.8	80.9	83.5	108.7	120.7	128.3	118.5	123.3	145.0	151.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	89.8	93.9	104.2	119.0	130.2	129.6	122.8	126.4	144.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	107.0	108.3	117.8	132.5	134.6	130.4	124.9	126.6	141.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	125.5	124.8	128.7	138.2	138.7	134.9	133.8	137.6	139.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	148.7	146.6	140.6	136.8	135.9	135.5	133.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	132.4	135.3	135.9	134.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	137.0	136.7	134.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	135.1	133.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	131.8	128.7	122.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	128.5	125.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
+	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		

1	301.0	301.0	288.0	298.0	290.0	0.0	285.0	284.0	281.0	278.0	273.0	271.0	272.0	274.0	275.0	0.0
2	286.8	289.8	282.3	288.4	284.8	0.0	278.0	276.5	273.7	270.5	288.6	268.0	289.4	271.2	273.3	0.0
3	284.2	295.0	0.0	279.0	276.8	273.2	273.0	270.7	267.4	264.7	263.7	266.0	266.6	268.3	269.9	0.0
4	282.5	293.1	0.0	288.8	271.2	289.9	268.4	265.2	281.7	258.1	260.5	262.4	264.2	269.0	266.9	0.0
5	0.0	0.0	0.0	262.1	286.0	283.9	261.0	258.1	256.0	254.4	257.1	259.8	262.0	264.0	265.3	0.0
6	0.0	0.0	225.9	240.5	251.2	258.8	256.0	253.9	252.7	253.6	256.0	258.5	261.0	263.6	266.4	0.0
7	0.0	0.0	222.8	236.6	253.8	253.6	251.9	250.5	250.6	252.6	254.9	257.5	260.2	263.1	266.0	0.0
8	0.0	213.1	220.5	238.7	251.9	250.2	248.4	246.7	248.8	251.2	253.7	258.2	259.1	262.6	264.3	0.0
9	206.8	215.4	232.4	246.7	247.1	246.5	245.2	243.8	247.0	249.6	252.2	254.7	257.4	0.0	0.0	0.0
10	207.8	218.9	239.7	242.1	242.8	242.7	242.7	243.4	245.5	248.0	250.6	253.0	255.3	257.0	0.0	0.0
11	207.0	218.5	238.2	236.9	239.3	238.8	240.0	241.7	243.9	246.2	248.7	251.2	253.7	256.2	0.0	0.0
12	199.5	228.6	232.8	235.3	236.6	236.4	237.7	239.7	241.9	244.2	246.6	249.1	251.6	251.8	0.0	0.0
13	224.7	225.8	228.4	231.6	235.3	234.6	235.2	237.0	239.3	241.5	244.0	246.8	248.3	0.0	0.0	0.0
14	221.7	220.9	222.6	226.5	232.5	230.9	230.4	232.1	234.0	236.9	240.4	245.9	0.0	0.0	0.0	0.0
15	217.8	212.8	213.4	218.6	228.5	224.4	219.9	223.4	223.5	227.9	233.5	240.7	246.0	0.0	0.0	0.0
16	210.3	206.7	207.9	214.0	225.6	218.3	210.6	212.1	217.4	226.7	232.2	244.6	248.7	241.8	0.0	0.0
17	205.1	202.5	204.9	212.4	223.4	212.0	204.3	205.9	212.7	224.4	231.7	237.1	0.0	0.0	0.0	0.0
18	202.9	200.8	204.4	213.0	221.2	204.8	198.9	203.8	211.5	222.9	230.8	236.3	238.3	0.0	0.0	0.0
19	202.4	201.3	207.9	225.8	207.1	193.8	194.4	204.7	214.8	222.8	229.2	239.3	0.0	0.0	0.0	0.0
20	202.8	203.6	213.4	203.2	191.5	183.4	191.6	210.7	230.4	233.5	230.0	0.0	0.0	0.0	0.0	0.0
21	204.2	207.4	192.4	180.9	174.3	177.8	189.8	225.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	202.7	185.7	173.1	165.7	164.1	169.6	187.4	212.0	224.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	178.6	162.4	156.2	153.7	157.3	168.4	186.3	210.5	225.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	158.0	144.3	142.6	160.6	160.9	174.8	192.2	208.7	225.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	140.8	125.6	138.2	152.7	168.5	185.2	204.1	221.3	222.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	112.9	117.0	138.0	161.0	178.8	199.3	218.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	98.4	112.1	147.0	187.8	190.1	204.4	215.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	121.8	133.5	152.3	165.7	192.7	208.8	214.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	122.0	131.0	140.3	162.0	192.0	210.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	118.5	129.0	137.8	160.9	185.6	207.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	119.2	126.0	134.0	152.8	179.8	202.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	118.9	122.0	127.0	141.9	171.1	200.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	116.9	121.0	150.5	164.9	181.9	201.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	121.0	116.6	148.8	180.1	199.2	201.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	108.7	121.7	162.3	193.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	113.1	137.3	162.4	191.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	131.3	153.3	186.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	144.3	165.1	185.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	151.1	170.7	187.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	165.3	187.9	188.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	179.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

LAST

UPDATED DATA FILE FOR: WITHOUT CONSERVATION INITIAL HEAD ELEVATION
DATA PROVIDED BY: UNIVERSITY OF ARKANSAS, FAYETTEVILLE, ARKANSAS
DATA PROVIDED ON: JUNE 30, 1988 CONTACT PERSON: ROSALINDA CANTILLER
FILE FORMAT: GAMS TABULAR FORM
DATA TYPE: REAL DATA UNITS: FT
MAXIMUM SIGNIFICANT DIGITS BEFORE THE DECIMAL PT:3 AFTER THE DECIMAL PT: 1
CONVERSION FACTOR FROM FT TO FT =1.0
DATA FILE LAST UPDATED ON:JUNE 30, 1988 TRAILER CARD: LAST
TABLE ELEV(I,J) SUBHEA14 OPTIMAL HEAD (FT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	188.5
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	179.5
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6	199.0	184.0	191.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.2	194.4	193.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	191.0	183.0	188.2
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	175.0	192.4
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	176.8
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	186.7	193.4
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	178.9	189.5
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	161.3	191.1	195.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	161.0	158.7	189.4	167.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.0	154.0	164.7	186.0	172.4
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	181.2	161.0	148.3	162.5	182.5	188.9
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	184.6	161.0	156.0	152.7	160.7	186.5	183.0	185.3
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.2	161.1	152.9	141.7	138.0	138.0	132.0	142.6	158.5	188.6
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	152.0	148.2	138.1	113.0	126.0	127.0	122.0	131.8	160.9	183.3
36	0.0	0.0	0.0	0.0	0.0	0.0	C.0	0.0	155.0	148.3	125.0	120.0	119.7	111.9	116.1	144.2	152.9	158.3
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	194.6	173.6	154.0	122.0	116.1	101.8	92.4	110.6	145.1	150.0	152.5
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	193.1	161.4	141.0	118.0	88.8	98.4	99.1	100.0	148.5	151.3	151.4
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	165.9	169.0	137.0	109.4	82.1	105.4	100.0	84.9	146.6	153.5	152.3
40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.2	149.1	124.8	105.4	95.2	98.7	82.7	89.4	144.5	149.9	155.6
41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	118.6	99.7	89.1	98.7	95.8	102.4	102.5	120.8	141.8	146.9	161.0
42	0.0	0.0	185.0	182.0	200.2	185.0	137.0	112.5	98.7	83.3	90.3	109.5	114.2	108.7	116.5	130.8	148.3	150.7
43	0.0	231.5	222.4	208.0	189.1	189.8	170.9	106.5	75.5	93.9	109.3	108.9	109.5	106.1	108.0	97.6	139.3	144.6
44	0.0	238.3	235.7	220.2	191.4	180.2	145.7	124.5	78.6	84.2	107.7	107.0	107.1	106.4	105.7	105.4	113.5	137.0
45	0.0	0.0	234.1	219.7	199.7	180.4	139.0	102.8	115.1	82.9	90.0	103.7	105.3	104.8	103.2	99.5	88.8	112.0
46	0.0	0.0	227.7	216.6	200.5	182.6	148.2	123.0	87.5	123.2	94.9	101.6	105.0	104.2	101.6	97.2	91.6	95.3
47	0.0	0.0	222.3	211.7	200.6	182.6	160.4	136.0	130.5	128.3	138.3	112.6	108.6	105.1	101.2	94.5	84.9	72.3
48	0.0	0.0	0.0	215.3	194.4	181.4	158.5	132.7	131.4	133.2	132.4	135.5	106.8	106.0	103.3	94.8	83.1	71.0
49	0.0	0.0	0.0	212.7	190.2	178.7	158.0	130.0	127.0	128.0	125.1	138.0	112.9	108.3	105.2	95.0	86.7	81.9
50	0.0	0.0	0.0	208.9	182.5	174.0	152.1	121.0	122.0	126.0	114.3	128.5	137.1	109.4	108.3	99.2	87.9	80.9
51	0.0	0.0	0.0	205.4	169.1	170.5	166.9	128.5	116.6	116.2	121.0	122.6	129.1	137.1	116.2	101.6	87.7	75.7
52	0.0	0.0	0.0	0.0	203.8	183.5	185.4	135.7	113.4	119.7	123.0	127.4	140.5	111.5	113.3	100.9	87.8	75.1
53	0.0	0.0	0.0	0.0	204.3	185.2	172.9	155.7	128.8	116.1	118.4	133.4	137.4	141.7	122.2	102.4	86.7	74.8
54	0.0	0.0	0.0	0.0	0.0	197.2	194.3	173.8	148.5	112.4	113.9	138.0	142.6	144.2	100.2	94.8	84.6	75.7
55	0.0	0.0	0.0	0.0	0.0	0.0	193.4	188.8	168.5	135.3	141.0	141.1	143.0	142.8	105.3	95.3	83.7	75.6
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.1	182.0	154.3	140.4	131.7	138.6	134.7	88.4	79.8	75.4
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	178.9	175.3	146.3	138.7	131.6	130.2	96.0	78.4
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	171.0	168.1	140.4	131.4	129.6	87.9
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.9	152.9	161.6	153.3	81.8
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	153.9	116.1
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	146.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	300.0	300.0	300.0	300.0	300.0	299.0	300.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	287.5	288.2	289.5	290.8	292.2	293.6	295.3
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	270.0	276.4	278.3	280.7	282.9	285.5	288.6	291.6
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	259.9	263.8	265.9	271.2	274.5	278.2	282.9	288.2
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	239.6	247.0	241.1	245.5	256.1	264.2	269.7	274.7	281.7
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	230.0	240.3	230.9	230.3	244.4	251.2	266.8	282.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	225.6	236.7	225.9	230.2	226.2	218.3	220.8	229.5	250.3	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	240.5	238.2	236.9	228.8	219.4	207.5	201.6	203.5	210.4	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	236.1	233.9	231.9	226.5	214.3	199.4	194.7	197.1	196.3	0.0	0.0	195.7
10	0.0	0.0	0.0	0.0	0.0	234.2	228.4	210.2	209.8	204.8	201.5	191.9	192.5	207.8	0.0	0.0	0.0	187.6
11	0.0	0.0	0.0	0.0	0.0	234.7	210.4	196.9	197.0	202.2	231.6	194.6	195.0	0.0	0.0	0.0	165.3	160.3
12	0.0	0.0	0.0	0.0	235.6	214.1	204.3	199.7	195.4	206.2	229.3	196.1	194.5	0.0	0.0	0.0	170.7	173.5
13	0.0	0.0	0.0	0.0	232.0	210.5	203.2	196.3	203.6	221.2	202.7	188.6	0.0	0.0	0.0	192.3	179.0	190.8
14	0.0	0.0	0.0	230.3	216.5	198.1	196.3	198.4	222.1	198.3	189.7	195.0	0.0	0.0	0.0	185.0	186.6	220.6
15	0.0	0.0	219.3	222.0	204.5	190.9	189.3	197.1	222.0	193.8	182.7	0.0	0.0	0.0	0.0	172.8	199.8	221.8
16	0.0	200.0	218.1	199.0	192.0	182.0	182.3	191.8	217.9	193.0	184.4	0.0	0.0	0.0	151.6	184.0	193.3	216.9
17	0.0	183.0	213.4	191.5	182.0	176.6	178.9	192.4	213.0	195.1	0.0	0.0	0.0	0.0	142.3	158.1	212.1	204.8
18	0.0	182.5	209.6	188.1	181.7	177.6	188.0	204.2	184.1	0.0	0.0	0.0	0.0	125.0	130.0	186.6	208.8	201.5
19	181.6	191.9	188.0	180.0	179.5	182.1	203.5	175.5	148.9	150.0	0.0	0.0	135.2	118.7	126.0	153.6	185.9	207.1
20	193.0	185.8	181.9	174.8	173.7	183.9	201.6	158.0	145.0	144.0	134.0	0.0	126.8	119.8	130.3	156.1	185.7	205.8

21	190.0	179.3	175.6	173.9	175.2	199.2	179.1	140.0	131.0	127.0	133.1	136.0	0.0	120.2	135.8	163.2	200.6	199.2
22	186.0	165.8	163.0	166.1	174.1	188.4	188.0	148.2	130.0	128.0	117.9	140.0	0.0	97.4	122.8	160.5	199.4	193.4
23	205.5	170.7	167.4	164.8	175.9	191.9	149.3	128.1	110.8	108.2	102.4	131.0	0.0	97.8	115.6	148.7	192.4	192.8
24	201.8	166.3	164.7	170.6	185.2	158.3	120.0	108.5	116.4	99.9	103.5	113.2	0.0	97.9	108.6	140.3	164.4	171.3
25	198.0	166.4	164.5	185.7	153.1	131.6	97.9	98.9	110.4	110.4	108.5	108.4	0.0	122.4	105.3	131.4	165.3	177.6
26	195.1	169.8	164.9	185.5	152.1	113.0	98.3	104.3	117.6	117.3	108.5	0.0	129.0	128.6	124.8	138.8	158.8	126.0
27	170.9	162.7	164.3	182.7	148.0	107.6	103.9	98.8	94.0	108.3	133.0	0.0	129.0	132.1	131.5	150.3	153.0	101.4
28	161.6	152.5	158.3	176.9	138.1	109.6	100.0	93.2	93.2	131.9	117.1	0.0	124.8	132.0	147.4	113.1	120.0	116.8
29	159.6	157.7	151.2	174.1	130.1	103.4	95.5	96.8	103.1	132.8	119.5	0.0	111.7	103.4	147.4	116.6	119.4	122.7
30	161.3	161.6	178.7	164.1	120.0	99.1	94.4	95.8	131.1	105.3	121.0	0.0	105.8	100.4	147.0	121.0	117.3	121.1
31	159.6	165.0	173.8	145.6	114.5	91.0	93.5	97.0	142.0	100.5	119.9	0.0	105.4	109.5	141.2	107.0	117.8	114.7
32	167.2	173.8	157.1	134.4	108.8	93.0	92.2	110.6	145.3	102.3	111.3	0.0	154.0	146.3	130.0	113.8	117.4	111.1
33	167.6	173.4	148.8	131.7	113.3	89.4	85.5	95.2	144.4	109.8	111.3	0.0	158.6	112.9	110.0	108.1	114.1	116.9
34	167.2	173.2	148.4	128.1	106.6	92.5	91.1	91.7	142.7	108.4	0.0	0.0	157.2	108.4	111.2	107.5	102.3	118.5
35	172.5	162.0	144.6	126.7	100.9	97.8	96.0	115.8	143.3	111.8	0.0	0.0	158.6	112.6	110.4	102.4	106.3	111.1
36	187.9	158.5	141.7	123.8	106.9	94.4	96.8	107.8	138.8	106.8	0.0	0.0	155.1	107.5	97.3	88.4	96.4	105.2
37	185.4	165.5	141.6	118.6	97.6	99.3	97.2	98.7	135.0	105.9	116.8	0.0	152.8	103.2	99.1	103.6	101.8	123.9
38	162.2	152.0	140.0	100.7	101.3	102.8	103.3	101.4	131.3	108.7	120.0	0.0	151.7	141.3	104.9	85.6	101.4	123.8
39	157.6	148.1	132.0	91.8	99.3	103.2	107.1	115.4	109.8	133.1	123.6	0.0	128.7	141.3	96.6	85.0	114.7	137.9
40	153.4	144.0	122.9	86.3	95.4	98.7	101.1	103.8	100.3	131.5	130.2	102.0	110.2	140.9	127.6	108.1	129.5	158.1
41	155.4	143.0	120.7	81.9	92.0	91.1	89.0	90.5	91.4	108.7	130.9	99.2	102.3	138.4	122.1	128.3	157.5	184.8
42	154.6	137.8	116.2	96.8	84.9	101.0	102.8	108.9	112.2	124.7	133.6	108.9	105.7	138.5	129.0	143.1	170.3	0.0
43	149.7	126.5	107.5	97.6	83.3	98.8	104.0	108.0	115.3	127.2	134.2	138.8	138.9	138.5	158.3	169.0	169.0	0.0
44	146.4	121.1	106.7	98.2	94.1	97.5	102.0	105.9	117.6	136.8	135.8	142.0	0.0	182.5	171.8	0.0	189.2	0.0
45	131.6	118.0	104.2	99.5	100.4	109.8	103.6	104.4	112.3	123.3	132.6	145.9	0.0	171.4	175.5	0.0	0.0	0.0
46	126.4	122.1	104.9	103.1	103.1	107.1	101.7	89.9	109.6	118.2	121.7	126.8	133.5	0.0	187.8	0.0	0.0	0.0
47	124.1	126.3	118.1	110.3	107.4	101.1	104.5	109.0	110.8	118.0	101.7	104.8	133.3	0.0	193.6	0.0	0.0	0.0
48	108.5	126.2	126.3	105.9	88.7	81.2	89.1	117.9	110.8	108.3	74.2	66.7	109.7	141.6	0.0	0.0	0.0	0.0
49	97.1	120.7	125.6	119.3	111.8	98.1	85.4	101.4	101.0	83.5	73.6	81.0	91.6	140.7	163.9	0.0	0.0	0.0
50	79.3	96.8	118.0	123.0	119.1	105.2	101.2	95.5	96.7	81.5	80.1	90.9	113.9	132.1	182.9	0.0	0.0	0.0
51	56.2	71.2	89.1	118.5	120.4	105.3	100.7	73.7	67.8	67.8	94.8	118.1	128.9	149.5	160.5	0.0	0.0	0.0
52	64.3	57.6	59.0	85.7	112.9	106.4	88.0	64.4	86.3	66.7	113.7	155.4	164.4	159.8	0.0	0.0	0.0	0.0
53	66.6	57.8	58.3	82.0	85.7	112.5	93.5	64.7	61.7	67.6	122.7	158.1	0.0	0.0	0.0	0.0	0.0	0.0
54	66.8	55.6	44.8	57.0	85.5	111.8	80.0	84.8	89.2	108.5	153.2	158.2	0.0	0.0	0.0	0.0	0.0	0.0
55	67.4	58.9	47.0	59.3	90.6	115.0	101.0	83.3	107.3	131.9	154.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	68.0	61.9	48.0	82.0	103.2	120.5	103.7	102.5	128.8	149.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	67.9	67.5	73.2	95.9	112.4	122.5	106.5	112.9	144.4	151.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	57.4	85.5	83.4	106.9	124.9	123.7	112.3	117.0	143.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	78.0	83.8	102.6	126.6	130.3	124.6	118.2	118.1	141.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	112.0	111.4	119.9	132.7	134.2	132.4	131.2	137.0	139.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	146.0	146.1	140.0	135.7	135.1	135.4	133.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	132.3	135.3	135.9	134.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	137.0	136.6	134.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	135.0	133.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	131.7	129.6	122.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	128.5	125.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

+	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
1	301.0	301.0	298.0	296.0	290.0	0.0	286.0	284.0	281.0	278.0	273.0	271.0	272.0	274.0	275.0	0.0
2	296.9	296.6	282.3	288.4	284.8	0.0	278.0	276.5	273.7	270.5	268.5	268.0	269.4	271.2	273.3	0.0
3	294.2	295.0	0.0	278.9	276.7	273.1	272.9	270.7	267.4	264.7	263.7	265.0	266.6	268.3	269.9	0.0
4	292.5	293.1	0.0	268.4	271.0	269.7	268.4	265.1	261.7	258.1	260.5	262.4	264.2	266.0	266.9	0.0
5	0.0	0.0	0.0	247.9	264.4	263.3	260.9	256.1	255.9	254.4	257.1	259.6	262.0	264.0	265.3	0.0
6	0.0	0.0	216.2	235.2	248.7	258.5	255.8	253.6	252.7	253.8	256.0	258.5	261.0	263.9	266.4	0.0
7	0.0	0.0	209.7	230.3	253.0	253.1	251.6	250.4	250.5	252.6	254.9	257.4	260.2	263.1	268.0	0.0
8	0.0	197.4	207.5	234.1	251.1	249.7	248.1	248.8	248.7	251.1	253.8	256.2	258.1	262.8	264.3	0.0
9	187.6	201.8	226.5	245.3	248.3	246.0	244.9	243.7	246.8	248.4	252.0	254.6	257.4	0.0	0.0	0.0
10	190.6	207.2	237.7	240.9	242.0	242.3	242.5	243.1	245.2	247.8	250.2	252.8	255.3	257.0	0.0	0.0
11	195.0	208.8	236.9	237.8	238.6	238.5	239.6	241.1	243.2	245.6	248.2	250.9	253.6	256.2	0.0	0.0
12	190.9	226.4	231.1	234.0	235.8	236.0	236.9	238.6	240.8	243.2	245.8	248.7	251.6	251.8	0.0	0.0
13	222.4	223.1	225.9	229.8	234.6	233.3	233.4	235.1	237.3	239.6	242.7	245.3	248.3	0.0	0.0	0.0
14	218.4	215.6	218.2	223.3	231.4	228.4	228.7	228.3	230.2	233.3	237.9	245.6	0.0	0.0	0.0	0.0
15	212.9	205.1	204.8	211.8	226.7	219.1	210.7	215.8	216.3	220.1	227.9	238.3	245.8	0.0	0.0	0.0
16	203.3	195.3	196.7	205.6	223.1	210.7	195.0	198.1	207.4	218.8	226.8	244.1	249.7	241.8	0.0	0.0
17	196.5	190.8	193.2	203.8	220.5	201.8	186.8	188.6	199.9	217.3	227.8	236.8	0.0	0.0	0.0	0.0
18	194.2	188.6	192.4	204.7	218.1	191.5	178.5	165.1	198.2	215.6	226.7	235.2	238.2	0.0	0.0	0.0
19	195.1	191.3	199.1	223.2	198.0	171.7	171.1	189.1	204.3	215.9	225.3	239.1	0.0	0.0	0.0	0.0
20	197.5	196.7	210.6	195.3	187.0	154.7	167.7	200.5	229.4	233.0	228.7	0.0	0.0	0.0	0.0	0.0
21	200.8	204.5	181.1	160.3	147.0	146.5	165.4	224.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	199.8	174.2	152.4	135.2	125.1	129.8	165.8	205.9	224.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	166.3	139.7	130.4	134.0	124.0	134.1	165.6	204.8	225.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	137.0	115.6	128.0	132.0	130.1	150.1	177.8	201.8	224.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	111.7	112.9	130.0	133.0	146.2	168.6	197.3	220.6	222.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	99.8	117.0	138.0	142.8	166.0	193.2	217.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	98.4	112.1	147.0	154.2	184.3	201.5	215.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	121.3	132.0	148.2	156.7	189.5	205.3	214.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	122.0	131.0	134.0	153.2	189.8	210.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	118.5	129.0	133.0	154.8	183.2	207.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	119.2	126.0	134.0	145.0	178.1	202.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	118.9	122.0	127.0	126.0	163.8	200.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	118.9	121.0	145.7	160.2	178.2	201.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	121.0	116.8	133.9	178.2	199.0	201.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	108.7	109.6	140.5	193.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	109.0	124.3	154.5	192.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	113.5	144.0	186.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	130.8	159.4	184.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	139.3	166.4	188.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	158.8	187.5	188.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	179.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

LAST

APPENDIX L

Data Supplied by the U. S. Geological Survey for
Constant Head Cell Minimum Recharge and
Missouri Cells' Groundwater Demand

UPDATED DATA FILE FOR: MINIMUM RECHARGE
DATA PROVIDED BY: U. S. GEOLOGICAL SURVEY, LITTLE ROCK, ARKANSAS.
DATA PROVIDED ON: MAY 27, 1988   CONTACT PERSON: GUS LUDWIG
FILE FORMAT: I, J, VALUE   FORMAT CODE: I5,I5,I10
DATA TYPE: INTEGER   DATA UNITS: CUBIC FT PER DAY
MAXIMUM SIGNIFICANT DIGITS BEFORE THE DECIMAL PT: 7 AFTER THE DECIMAL PT: 0
CONVERSION FACTOR FROM CUBIC FT PER DAY TO ACRE FT PER YEAR = 0.0084
DATA FILE LAST UPDATED ON: JUNE 16, 1988   TRAILER CARD: I = -1

1	30	198600
1	31	171200
1	32	187800
1	33	196100
1	34	257700
1	35	322000
1	36	238100
1	37	215700
1	38	228200
1	39	370400
1	40	436700
1	41	492900
1	43	589700
1	44	617500
1	45	668400
1	46	795500
1	47	1045900
1	48	1377400
1	49	1086800
1	50	1230500
1	51	1707800
-1		

```
UPDATED DATA FILE FOR: GROUNDWATER DEMAND IN THE MISSOURI CELLS
DATA PROVIDED BY: U. S. GEOLOGICAL SURVEY, LITTLE ROCK, ARKANSAS.
DATA PROVIDED ON: JANUARY 5,1987 CONTACT PERSON: GUS LUDWIG
FILE FORMAT: I, J, VALUE          FORMAT CODE: I5,I6,G6.1
DATA TYPE: REAL                   DATA UNITS: MILLION GALLONS PER DAY
MAXIMUM SIGNIFICANT DIGITS BEFORE THE DECIMAL PT: 1 AFTER THE DECIMAL PT: 1
CONVERSION FACTOR FROM  MILLION GALLONS PER DAY TO ACRE-FT PER YEAR = 1121.2
DATA FILE LAST UPDATED ON: JUNE 16, 1988   TRAILER CARD: I = -1
NOTE: DATA REVISION MADE BY DELETING THE FIRST ROW DEMAND
    2    30   1.5
    2    31   1.5
    2    32   1.5
    2    33   2.8
    2    34   2.8
    2    35   2.8
    2    36   2.8
    2    37   2.8
    2    37   2.8
    2    38   2.8
    2    39   2.8
    2    40   0.1
    2    41   0.1
    2    42   0.0
    2    43   0.1
    2    44   0.3
    2    45   0.3
    2    46   0.3
    2    47   0.3
    2    48   0.3
    2    49   0.3
    2    50   0.3
    2    51   0.3
    2    52   0.0
    3    41   0.1
    3    42   0.1
    3    43   0.1
    3    44   0.3
    3    45   0.3
    3    46   0.3
    3    47   0.3
    3    48   0.3
    3    49   0.3
    3    50   0.3
    3    51   0.3
    3    52   0.0
    4    41   0.1
    4    42   0.1
    4    43   0.1
    4    44   0.3
    4    45   0.3
    4    46   0.3
    4    47   0.3
    4    48   0.3
    4    49   0.3
    4    50   0.3
```

4	51	0.3
4	52	0.0
5	42	0.1
5	43	0.1
5	44	0.3
5	45	0.3
5	46	0.3
5	47	0.3
5	48	0.1
5	49	0.1
5	50	0.1
5	51	0.3
5	52	0.0
6	42	0.1
6	43	0.1
6	44	0.1
6	45	0.1
6	46	0.1
6	47	0.1
6	48	0.1
6	49	0.1
6	50	0.1
6	51	0.3
6	52	0.0
7	42	0.1
7	43	0.1
7	44	0.1
7	45	0.1
7	46	0.1
7	47	0.1
7	48	0.1
7	49	0.1
7	50	0.1
7	51	0.1
7	52	0.0
8	42	0.1
8	43	0.1
8	44	0.1
8	45	0.1
8	46	0.1
8	47	0.1
8	48	0.1
8	49	0.1
8	50	0.1
8	51	0.1
8	52	0.0
9	41	0.1
9	42	0.1
9	43	0.1
9	44	0.1
9	45	0.1
9	46	0.1
9	47	0.1
9	48	0.1
9	49	0.1

9	50	0.0
9	51	0.0
9	52	0.0
10	40	0.1
10	41	0.1
10	42	0.1
10	43	0.1
10	44	0.1
10	45	0.1
10	46	0.1
10	47	0.1
10	48	0.1
10	49	0.1
10	50	0.1
10	51	0.1
10	52	0.0
11	39	0.1
11	40	0.1
11	41	0.1
11	42	0.1
11	43	0.1
11	44	0.1
11	45	0.1
11	46	0.1
11	47	0.1
11	48	0.1
11	49	0.1
11	50	0.1
11	51	0.1
11	52	0.0
12	38	0.1
12	39	0.1
12	40	0.1
12	41	0.1
12	42	0.1
12	43	0.1
12	44	0.1
12	45	0.1
12	46	0.1
12	47	0.1
12	48	0.1
12	49	0.1
12	50	0.1
12	51	0.1
12	52	0.0
13	38	0.1
13	39	0.1
13	40	0.1
13	41	0.1
13	42	0.1
13	43	0.1
13	44	0.1
13	45	0.1
13	46	0.1
13	47	0.1

13	48	0.1
13	49	0.1
13	50	0.1
13	51	0.0
13	52	0.0
14	37	0.1
14	38	0.1
14	39	0.1
14	40	0.1
14	41	0.1
14	42	0.1
14	43	0.1
14	44	0.1
14	45	0.1
14	46	0.1
14	47	0.1
14	48	0.1
−1		

APPENDIX M

Data Supplied by the U. S. Army Corps of Engineers for Influent, Lower Limit on Effluent, and Overland Inflow

```
UPDATED DATA FILE FOR: INFLUENT VALUES
DATA PROVIDED BY: CORPS OF ENGINEERS, MEMPHIS, TENNESSEE.
DATA PROVIDED ON: APRIL 16, 1987 CONTACT PERSON: KEN BRIGHT
FILE FORMAT: I, J, VALUE          FORMAT CODE: I3,I3,G10.2
DATA TYPE: REAL                   DATA UNITS: CFS
MAXIMUM SIGNIFICANT DIGITS BEFORE THE DECIMAL PT: 6 AFTER THE DECIMAL PT: 2
CONVERSION FACTOR FROM CFS TO ACRE-FT PER YEAR = 724.4628
DATA FILE LAST UPDATED ON: JUNE 15, 1988   TRAILER CARD: I = -1
  1 37   1780.00
  1 39   2247.00
  2 48   1148.00
  2 51 471082.00
 11 29    413.00
 22 15  10370.00
 27 29    513.00
 32 13   2430.00
 42  5    290.00
 44  2  40074.00
 -1
```

```
UPDATED DATA FILE FOR: LOWER LIMIT ON EFFLUENT
DATA PROVIDED BY: CORPS OF ENGINEERS, MEMPHIS, TENNESSEE.
DATA PROVIDED ON: APRIL 16, 1987 CONTACT PERSON: KEN BRIGHT
FILE FORMAT: I, J, VALUE          FORMAT CODE: I3,I3,G9.1
DATA TYPE: REAL                   DATA UNITS: CFS
MAXIMUM SIGNIFICANT DIGITS BEFORE THE DECIMAL PT: 6 AFTER THE DECIMAL PT: 1
CONVERSION FACTOR FROM CFS TO ACRE-FT PER YEAR = 724.4628
DATA FILE LAST UPDATED ON: JUNE 15, 1988  TRAILER CARD: I = -1
 14 48 194600.0
 18 35    308.0
 22 18   1829.0
 23 36    292.0
 25 36    600.0
 31 33    283.0
 33 16    298.0
 33 17   7700.0
 43 31    159.0
 44 19    257.0
 45 32   1047.0
 47 33 207400.0
 58 17    181.0
 61 23  10400.0
 62 23  10400.0
 66 23 173000.0
 -1
```

UPDATED DATA FILE FOR: OVERLAND INFLOW
DATA PROVIDED BY: CORPS OF ENGINEERS, MEMPHIS, TENNESSEE.
DATA PROVIDED ON: APRIL 16, 1987 CONTACT PERSON: KEN BRIGHT
FILE FORMAT: I, J, VALUE FORMAT CODE: I3,I3,G7.1
DATA TYPE: REAL DATA UNIT: CFS
MAXIMUM SIGNIFICANT DIGITS BEFORE THE DECIMAL PT: 4 AFTER THE DECIMAL PT: 1
CONVERSION FACTOR FROM CFS TO ACRE-FT PER YEAR = 724.4628
DATA FILE LAST UPDATED ON: JUNE 15, 1988 TRAILER CARD: I = -1

2	51	543.0
3	29	268.0
3	51	543.0
4	29	268.0
4	34	268.0
4	40	95.0
4	51	543.0
5	29	268.0
5	33	268.0
5	41	95.0
5	51	543.0
6	29	268.0
6	32	268.0
6	51	543.0
7	28	268.0
7	30	268.0
7	31	268.0
7	41	95.0
7	51	543.0
8	26	268.0
8	27	268.0
8	28	268.0
8	29	268.0
8	50	543.0
8	51	543.0
9	25	268.0
9	26	268.0
9	27	268.0
9	40	95.0
9	49	543.0
10	25	268.0
10	39	95.0
10	50	543.0
11	24	268.0
11	50	543.0
12	23	268.0
12	29	70.0
12	49	543.0
12	50	543.0
13	23	268.0
13	28	70.0
13	37	95.0
13	49	543.0
14	22	268.0
14	27	70.0
14	36	95.0
14	48	543.0

15	22	268.0
15	27	70.0
15	36	95.0
15	49	543.0
16	21	268.0
16	27	70.0
16	36	95.0
16	41	154.0
16	48	543.0
16	49	543.0
16	50	543.0
17	21	268.0
17	27	70.0
17	35	92.0
17	41	154.0
17	48	543.0
18	21	268.0
18	26	70.0
18	41	154.0
18	49	543.0
19	20	268.0
19	25	70.0
19	40	154.0
19	48	543.0
20	19	268.0
20	25	70.0
20	36	553.0
20	39	154.0
20	45	543.0
20	46	543.0
20	47	543.0
21	19	266.0
21	24	70.0
21	35	553.0
21	38	154.0
21	44	543.0
22	24	70.0
22	35	553.0
22	37	156.0
22	45	543.0
23	16	849.0
23	17	849.0
23	18	849.0
23	19	849.0
23	24	70.0
23	35	553.0
23	45	543.0
24	19	849.0
24	23	70.0
24	35	556.0
24	45	543.0
25	19	849.0
25	22	70.0
25	44	543.0
25	45	543.0

26	19	849.0
26	22	70.0
26	43	543.0
27	18	849.0
27	22	70.0
27	34	205.0
27	35	205.0
27	43	543.0
28	18	849.0
28	22	70.0
28	28	42.0
28	33	205.0
28	43	543.0
29	17	849.0
29	22	70.0
29	28	42.0
29	33	205.0
29	42	543.0
30	17	849.0
30	21	70.0
30	27	42.0
30	33	208.0
30	42	543.0
31	17	849.0
31	21	70.0
31	27	42.0
31	42	543.0
32	18	849.0
32	20	70.0
32	27	42.0
32	31	236.0
32	42	543.0
33	14	668.0
33	15	669.0
33	18	853.0
33	20	70.0
33	27	42.0
33	31	236.0
33	42	543.0
34	20	70.0
34	27	42.0
34	31	236.0
34	41	543.0
34	42	543.0
35	17	427.0
35	19	70.0
35	27	42.0
35	31	236.0
35	40	543.0
36	16	427.0
36	19	70.0
36	27	42.0
36	31	236.0
36	40	543.0
37	16	427.0

37	19	70.0
37	27	42.0
37	31	236.0
37	39	543.0
38	16	427.0
38	19	70.0
38	27	42.0
38	31	236.0
38	32	236.0
38	39	543.0
39	16	427.0
39	19	70.0
39	28	42.0
39	32	236.0
39	39	543.0
40	16	427.0
40	18	70.0
40	28	42.0
40	32	236.0
40	38	543.0
40	39	543.0
41	16	427.0
41	19	70.0
41	29	42.0
41	32	236.0
41	36	543.0
41	37	543.0
42	17	427.0
42	19	70.0
42	29	42.0
42	32	42.0
42	35	543.0
43	6	98.0
43	7	98.0
43	17	427.0
43	19	77.0
43	30	45.0
43	33	236.0
43	34	543.0
43	35	543.0
44	3	18.0
44	8	98.0
44	18	427.0
44	32	248.0
44	33	543.0
45	3	18.0
45	9	98.0
45	19	427.0
45	33	543.0
46	3	18.0
46	10	98.0
46	19	427.0
46	33	543.0
47	3	18.0
47	11	98.0

47	19	427.0
47	20	427.0
47	33	548.0
48	4	18.0
48	12	98.0
48	20	427.0
49	12	98.0
49	20	427.0
50	4	18.0
50	13	98.0
50	21	427.0
50	33	2708.0
51	4	18.0
51	14	98.0
51	22	427.0
51	33	2708.0
52	5	18.0
52	13	98.0
52	23	427.0
52	30	2708.0
52	31	2708.0
52	32	2708.0
53	5	18.0
53	14	98.0
53	24	427.0
53	30	2708.0
54	6	18.0
54	7	18.0
54	14	98.0
54	24	427.0
54	29	2708.0
54	30	2708.0
55	7	18.0
55	8	18.0
55	14	98.0
55	24	427.0
55	29	2708.0
56	9	18.0
56	10	18.0
56	15	98.0
56	24	427.0
56	28	2708.0
57	11	18.0
57	12	18.0
57	16	100.0
57	24	427.0
57	27	2708.0
57	28	2708.0
58	13	18.0
58	14	18.0
58	23	427.0
58	27	2708.0
59	14	18.0
59	15	18.0
59	16	18.0

```
59 17   18.0
59 22  427.0
59 27 2708.0
60 17   18.0
60 22  438.0
60 26 2708.0
60 27 2708.0
61 18   18.0
61 19   18.0
61 20   18.0
61 21   18.0
61 24 2708.0
61 25 2708.0
62 22   18.0
62 23   18.0
62 25 2708.0
63 23   18.0
63 25 2708.0
64 23   18.0
64 24 2708.0
65 23   32.0
65 25 2708.0
66 24 2714.0
-1
```